# PATENT COOPERATION TREATY

## PCT

### NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

**From the INTERNATIONAL BUREAU**

To:

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Sweelinckplein 1
NL-2517 GK The Hague
PAYS-BAS

| | |
|---|---|
| **Date of mailing** (day/month/year) <br> 07 February 2002 (07.02.02) | |
| **Applicant's or agent's file reference** <br> 3.XO49 | **IMPORTANT NOTIFICATION** |
| **International application No.** <br> PCT/NL00/00576 | **International filing date** (day/month/year) <br> 18 August 2000 (18.08.00) |

**1.** The following indications appeared on record concerning:

[X] the applicant　　[ ] the inventor　　[ ] the agent　　[ ] the common representative

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**2.** The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[X] the person　　[ ] the name　　[ ] the address　　[ ] the nationality　　[ ] the residence

| Name and Address <br><br> BEERENS & VAN DIJK <br> Prins Hendrikkade 169-3 <br> NL-1011 TC Amsterdam <br> Netherlands <br> + <br> ROBIJNS, Monique <br> Rembrandtweg 198 <br> NL-1181 GZ Amstelveen <br> Netherlands | State of Nationality <br> NL | State of Residence <br> NL |
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| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

**3.** Further observations, if necessary:
**ASSIGNMENT TO BOTH APPLICANTS FOR ALL DESIGNATED STATES EXCEPT US.**

**4.** A copy of this notification has been sent to:

[X] the receiving Office

[ ] the International Searching Authority

[ ] the International Preliminary Examining Authority

[ ] the designated Offices concerned

[X] the elected Offices concerned

[ ] other:

| **The International Bureau of WIPO** <br> **34, chemin des Colombettes** <br> **1211 Geneva 20, Switzerland** <br><br> Facsimile No.: (41-22) 740.14.35 | Authorized officer <br><br> Peggy Steunenberg <br><br> Telephone No.: (41-22) 338.83.38 |
|---|---|

# PATENT COOPERATION TREATY
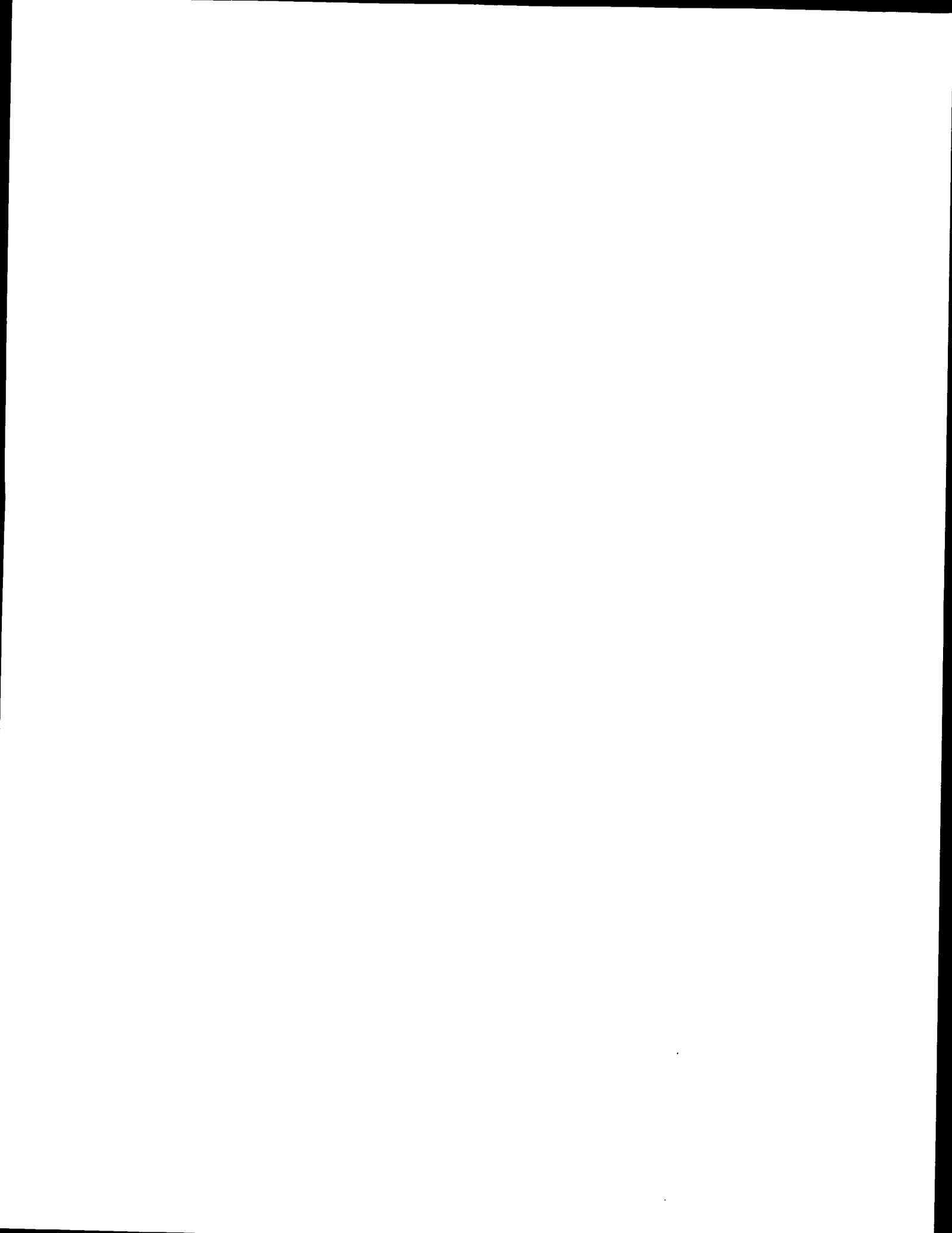
From the INTERNATIONAL BUREAU

## PCT

### NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| Date of mailing (day/month/year) 06 June 2001 (06.06.01) | |
|---|---|
| International application No. PCT/NL00/00576 | Applicant's or agent's file reference 3.XO49 |
| International filing date (day/month/year) 18 August 2000 (18.08.00) | Priority date (day/month/year) 26 August 1999 (26.08.99) |
| Applicant EILANDER, Johan, Peter et al | |

1. The designated Office is hereby notified of its election made:

   [X] in the demand filed with the International Preliminary Examining Authority on:

   26 March 2001 (26.03.01)

   [ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

   [ ] was not

   made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).
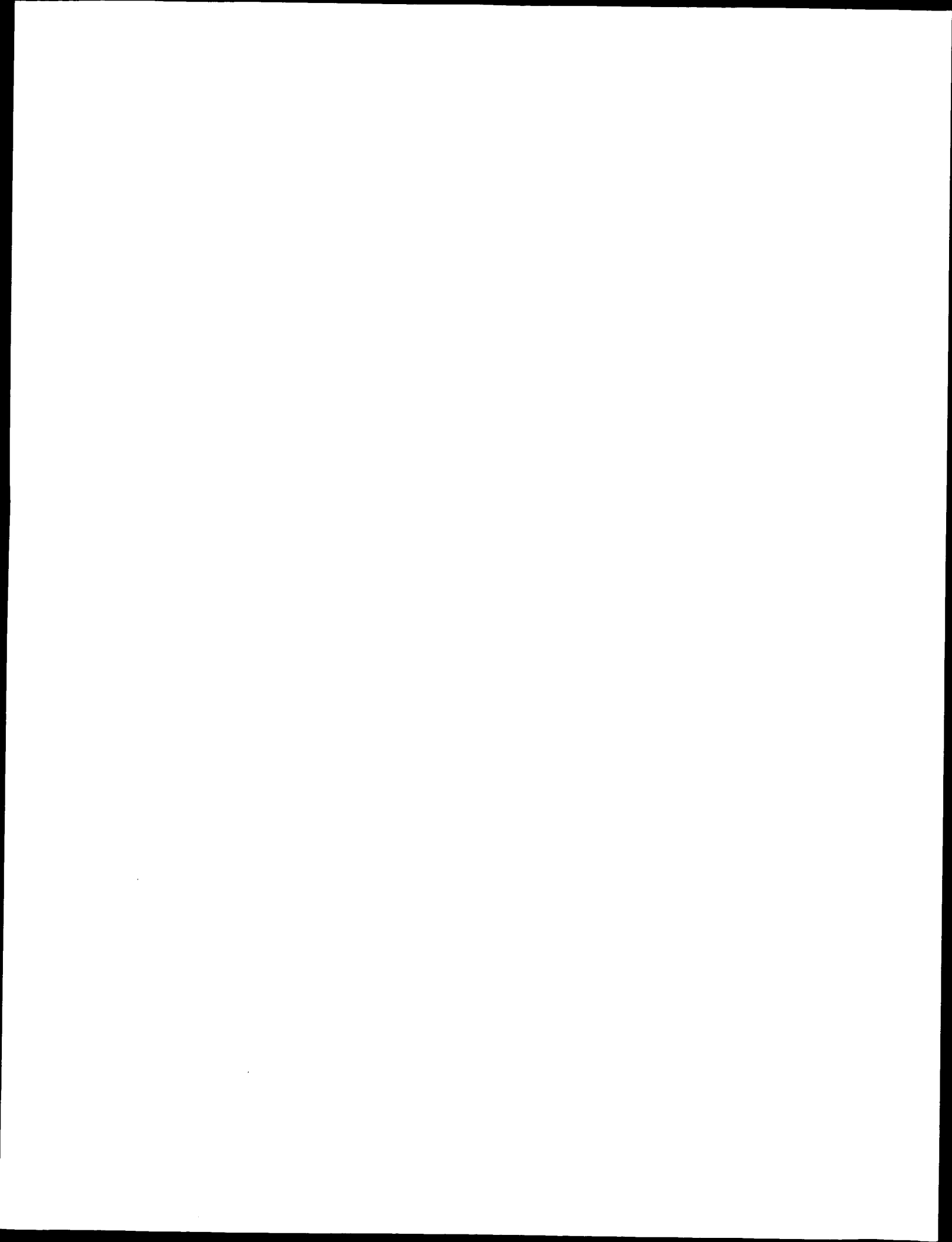
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer Zakaria EL KHODARY |
|---|---|
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| Applicant's or agent's file reference<br><br>3.X049 | **FOR FURTHER ACTION** | see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |
|---|---|---|
| International application No.<br><br>PCT/NL 00/ 00576 | International filing date *(day/month/year)*<br><br>18/08/2000 | (Earliest) Priority Date *(day/month/year)*<br><br>26/08/1999 |

| Applicant<br><br>TICKET DIRECT B.V. et al. |
|---|

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of _____3_____ sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.     1_____

   [X] as suggested by the applicant.       [ ] None of the figures.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

Form PCT/ISA/210 (first sheet) (July 1998)

# INTERNATIONAL SEARCH REPORT

**A. CLASSIFICATION OF SUBJECT MATTER**
IPC 7   G07B15/00      G07C11/00      G07B1/02      G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   G07B   G07C   G07F   G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | WO 94 27258 A (SPAULDING JOHN ;INTERACTIVE TELEVISION SYSTEMS (US); RHOADES DONAL) 24 November 1994 (1994-11-24) abstract; figures page 3, line 24 -page 9, line 5 page 16, line 25 -page 19, line 11 page 20, line 27 -page 26, line 26 --- | 1-11, 14-22 |
| Y | DE 197 43 630 A (DORTMUNDER STADTWERKE AG) 15 April 1999 (1999-04-15) abstract; claims; figures column 1, line 25 - line 42 column 2, line 55 - line 65 --- -/-- | 1-11, 14-22 |

| X | Further documents are listed in the continuation of box C. | | X | Patent family members are listed in annex. |

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

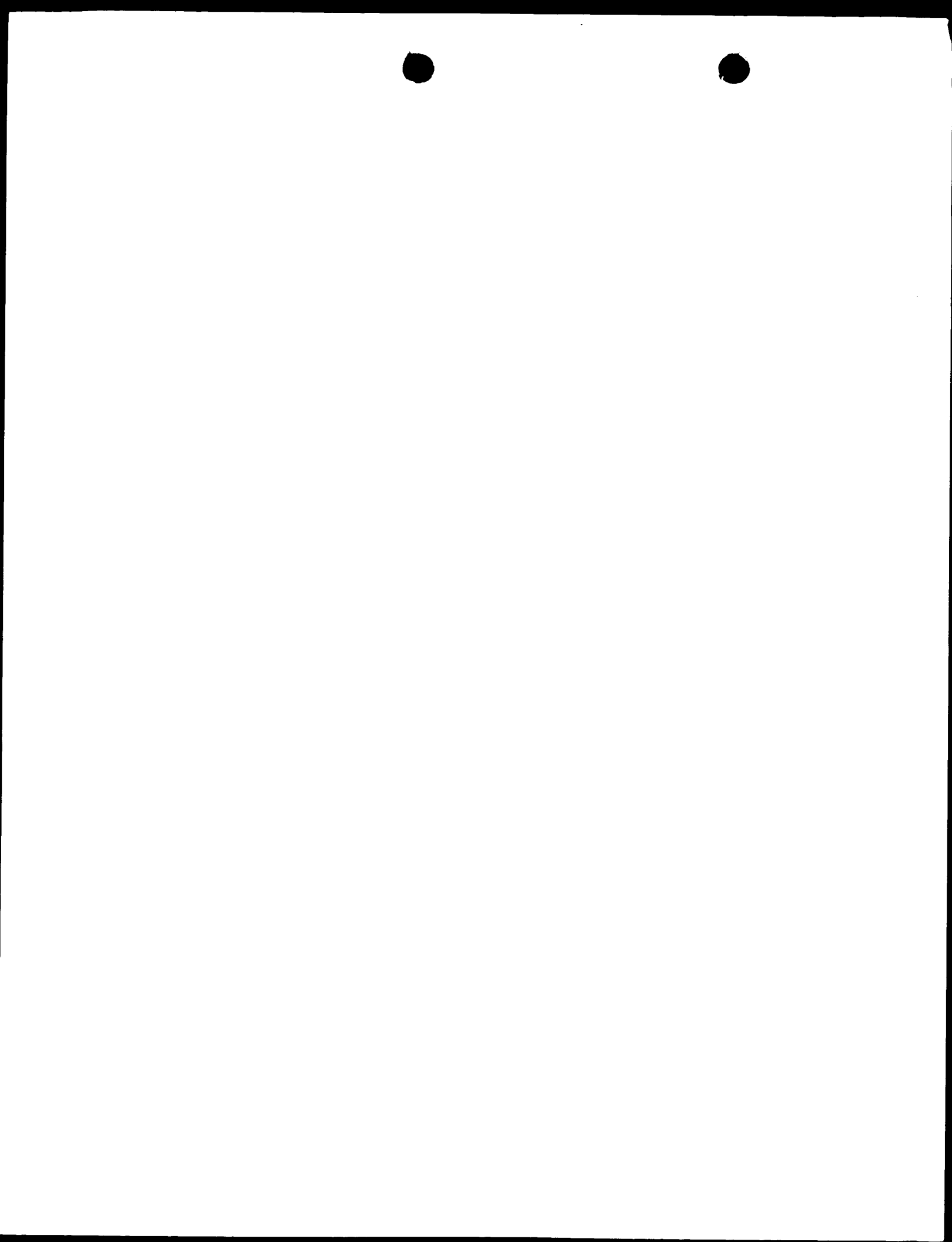| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 17 October 2000 | 25/10/2000 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016 | Meyl, D |

Form PCT/ISA/210 (second sheet) (July 1992)

page 1 of 2

# INTERNATIONAL SEARCH REPORT

**C.(Continuation)** DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | EP 0 708 417 A (TRELL ANDERS EDVARD ;ISAKSSON LARS (SE)) 24 April 1996 (1996-04-24) abstract; claims; figures column 2, line 8 -column 4, line 28 --- | 1-22 |
| A | DE 197 54 384 A (SIEMENS AG) 24 June 1999 (1999-06-24) abstract; claims; figures column 2, line 45 -column 3, line 19 --- | 1-22 |
| A | DE 33 00 850 A (STANDARD ELEKTRIK LORENZ AG) 19 July 1984 (1984-07-19) --- | |
| A | EP 0 210 963 A (SINTEL ORSINI SPA) 4 February 1987 (1987-02-04) --- | |
| A | US 5 724 520 A (GOHEEN JOEL R) 3 March 1998 (1998-03-03) ----- | |

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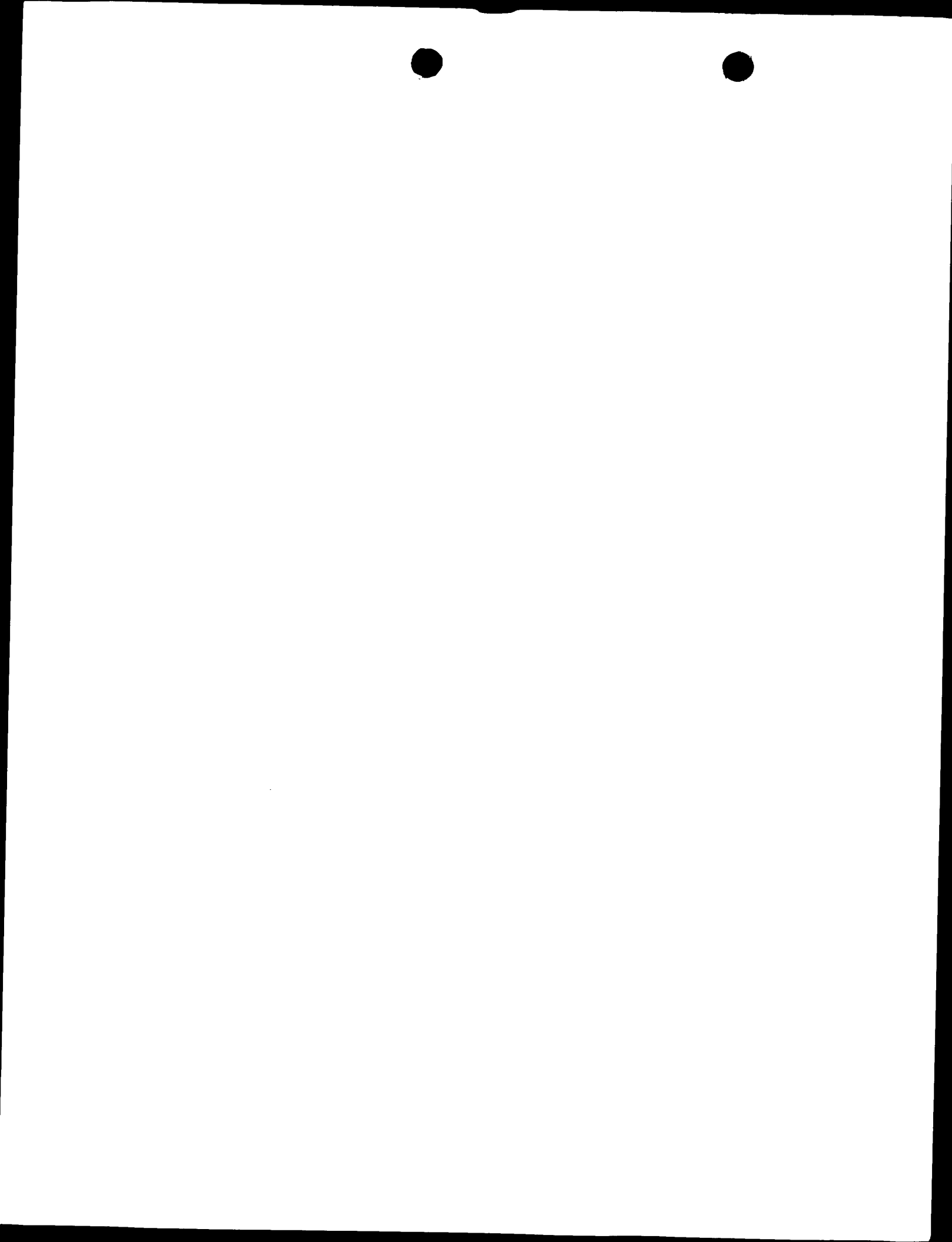
# INTERNATIONAL SEARCH REPORT

Information on patent family members

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|---|---|---|---|---|---|
| WO 9427258 | A | 24-11-1994 | AU | 6912894 A | 12-12-1994 |
| DE 19743630 | A | 15-04-1999 | NONE | | |
| EP 0708417 | A | 24-04-1996 | SE | 9403246 A | 27-03-1996 |
| DE 19754384 | A | 24-06-1999 | NONE | | |
| DE 3300850 | A | 19-07-1984 | NONE | | |
| EP 0210963 | A | 04-02-1987 | IT | 1182803 B | 05-10-1987 |
| US 5724520 | A | 03-03-1998 | US | 6094640 A | 25-07-2000 |

**(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)**

(54) Title: ISSUING COMPUTER, ADMISSION CONTROL SYSTEM AND METHOD FOR GRANTING ADMISSION TO AN EVENT

(57) Abstract: A method for granting admission to an event, wherein an admission code is issued to a consumer via a distribution channel, which admission code is in accordance with a predetermined format and which forms part of a set of admission codes, which set of admission codes forms a predetermined random or pseudo-random subset of all codes having the predetermined format, wherein it is checked at the entrance to the event whether a code presented by a consumer is part of the set of admission codes.

patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *With international search report.*

## ISSUING COMPUTER, ADMISSION CONTROL SYSTEM AND METHOD FOR GRANTING ADMISSION TO AN EVENT

The present invention relates to a method for granting
5   admission to an event, wherein an admission code is issued to a consumer via a distribution channel, which admission code has a predetermined format and which forms part of a set of admission codes. A code having a predetermined format may for example be a number or an
10   alphanumeric sequence comprising a predetermined number of positions. It is noted that in this connection the term event is understood to refer to a trip as well.

A method of this kind is known, for example in
15   connection with the granting of admission to aeroplanes as used, among others, by the British airline EasyJet Airlines Company. A consumer can thereby order a ticket via the Internet and pay with a credit card, for example, whereby an admission code consisting of for
20   example 6 alphanumeric characters is transmitted, likewise via the Internet, which code can be printed out by the consumer on his printer. The passenger must show this admission code at the gate to the aeroplane, where this code is compared with the list of codes that have
25   been issued. If the code being presented is included in the list and the name on the passenger's passport moreover corresponds with the name on the list, the passenger is granted admission to the aeroplane.

30   The drawback of this prior art method is the fact that a current and complete list of all admission codes that have been given out must be available at the gate to the aeroplane, which makes it necessary either to have an on-line connection with the issuing computer at the gate
35   to the aeroplane or to stop the issuing admission codes well in advance and transmit the admission codes that have been granted to the memory of the computer that is present at the gate to the aeroplane. Moreover, the risk

of fraud resulting from the fact that a series of consecutive admission codes is issued is so large that a laborious additional check, such as passport control, is necessary when such a method is used. A method of this

5   kind is furthermore not very suitable for events where it is not customary to present an identity card at the entrance.

The object of the invention is to provide an

10  inexpensive, quick, simple and efficient method of granting admission to an event, wherein the risk of fraud is minimized and additional checks are not necessary.

15  According to the inventive method, the set of admission codes is to that end made up of a predetermined random or pseudo-random subset of all codes having the predetermined format, wherein it is checked at the entrance to the event and/or the journey whether a code

20  presented by a consumer is part of the set of admission codes. According to the invention, said set of admission codes need not represent the actually issued admission codes, but the entire set may comprise predetermined admission codes, irrespective of the fact whether they

25  have actually been issued or not.

If the subset of admission codes is sufficiently small in comparison with the complete set of all codes having the prescribed format, and it is at the same time

30  ensured that the set of admission codes does not constitute an obvious sequence (in other words, a random or pseudo-random sequence), the risk of someone conceiving and presenting a code that is part of the set of admission codes is very small, viz. in the order of

35  the proportion between the number of elements of the subset and the complete set. It is simple, therefore, to make this proportion very small by giving the admission

code a format of for example 20 alphanumeric characters,
which, given a maximum number of admission codes of for
example 100,000, gives more than $10^{31}$ possible codes, and
to ensure that the set of admission codes constitutes a
5   maximally random subset of the complete set.

Preferably, the code is placed on a carrier, preferably
by means of a printer, after receipt by the consumer.
Preferably the code comprises a bar code, which
10  represents for example the aforesaid alphanumeric
sequence. Preferably, the distribution channel is the
Internet. The above preferred embodiments ensure that
the issuing of codes takes place in a consumer-friendly,
simple and quick manner, which codes can subsequently be
15  subjected to a check in a simple manner.

The invention is especially advantageous if the event is
a sports event, a concert, a day in an amusement park, a
cinema show, a theatre show, a fair, a symposium, a boat
20  trip, a rail journey, a bus journey or a flight.

Preferably, an entrance gate is unlocked or locked in
dependence on the result of the check. This can take
place automatically, for example, if the entrance gate
25  is connected to an admission computer that does the
checking.

At the entrance to the event the presented code is
preferably input into the admission computer by means of
30  an input apparatus, preferably an optical scanner, which
admission computer carries out the check at the entrance
by subjecting the presented code to a logic operation,
the result of which is compared with a predetermined set
of results that is stored in the memory of the admission
35  computer.

The advantage of this method, wherein it is not the

4

codes themselves that are checked but rather the results
of an operation carried out thereon, for example one or
more known cryptologic operations, is that the results
themselves may constitute a consecutive, non-random

5    sequence, which may include all kinds of information
about the event, preferably an identification of an
entrance gate where the consumer must present the code,
an admission date, an admission time segment, a seat
number and/or a serial number. The admission computer

10   can thereby selectively carry out the comparison between
the result and the set of predetermined results on part
of the result, so that for example the check with regard
to the entrance gate number or the date and/or the time
can be omitted as desired if there are special

15   circumstances.

Preferably the routine for the logic operation is
changed periodically. This discourages possible frauds
from deriving the routine for the logic operation by

20   means of protracted analysis of the issued admission
codes.

Preferably, the admission code is determined upon being
issued by an issuing computer by retrieving a result

25   from said predetermined set of results and to subject
the result to the inverse of the logic operation that
will be used at the moment of admission, wherein the
issuing computer preferably processes a result into an
admission code only once.

30

As already said before, the set of results may be a
consecutive sequence, for example consisting of an
entrance gate number, a date, a period and a serial
number. By subjecting, at the issuing moment, the

35   admission code to the inverse of the operation that will
be carried out on the admission code at the respective
entrance gate number, on the specific date, in the

specific period, the correct admission code that will
grant admission to the event under those conditions will
be obtained. In that case the only data that need to be
programmed into the admission computer in advance in
5    order to enable the check are the entrance gate number,
the date, the period and the operation routine, and not
the (issued) serial numbers, therefore.

Preferably, in order to prevent the same admission code
10   being used a second time, at least one characteristic
part of the presented admission code and/or the
associated result, for example the serial number, is
stored in a memory of the admission computer, and said
admission code is then excluded from admission.
15

The invention also relates to an admission control
system and to an issuing computer for implementing the
method according to the invention.

20   The invention furthermore relates to a carrier on which
an admission code has been placed by means of the method
according to the invention.

The invention will now be explained in more detail with
25   respect to the figures, which show an exemplary
embodiment of the invention, merely for the purpose of
illustration.

Figure 1 is a schematic representation of the Internet,
30   to which an issuing computer and a home computer are
connected;

Figure 2 is a schematic representation of a subset of
admission codes;
35

Figure 3 is a schematic representation of another subset
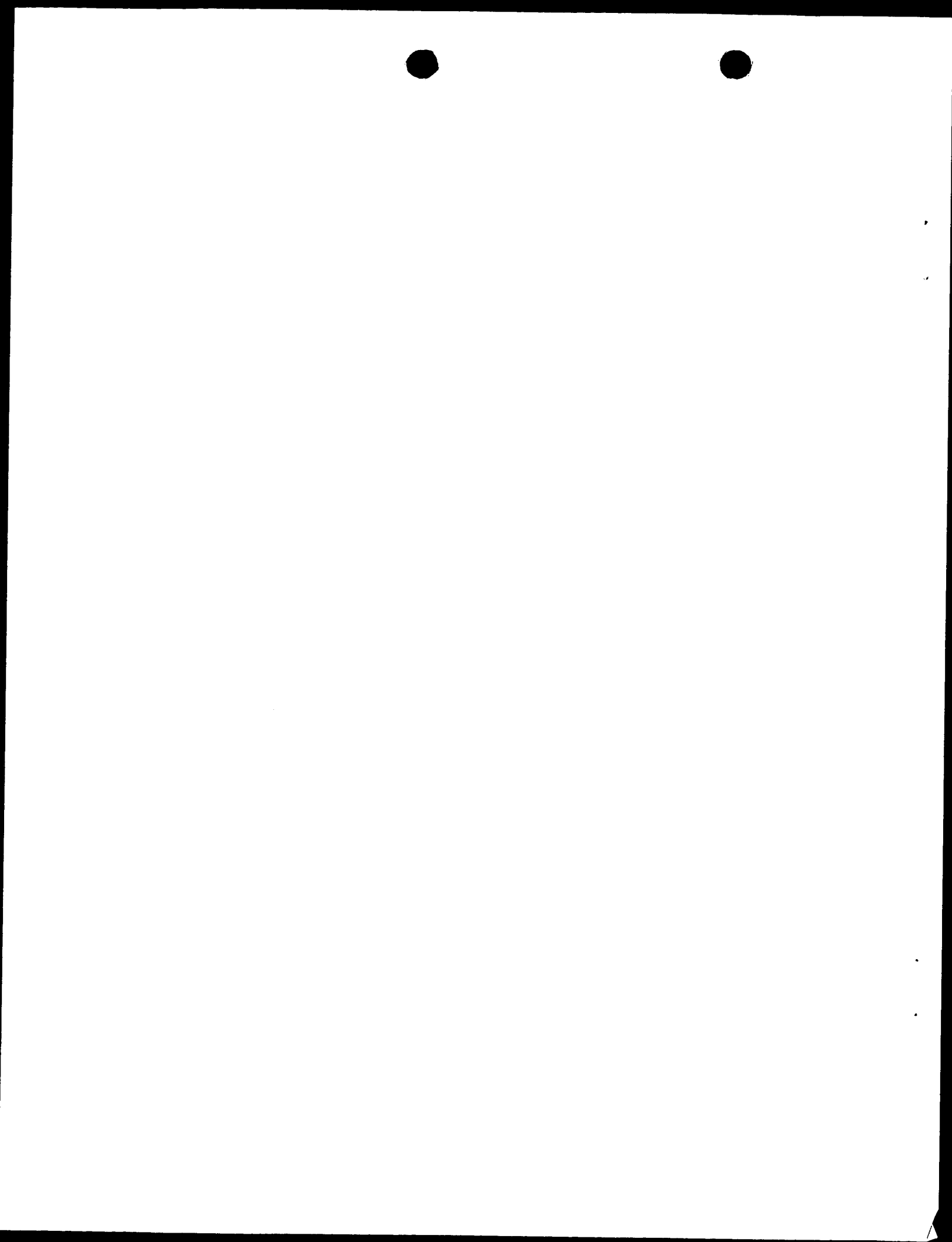of admission codes;

Figure 4 is a schematic representation of a logic operation, to which a subset of codes is subjected; and

5 Figure 5 is a schematic representation of an admission control system.

Figure 1 schematically shows a computer network, the Internet in this case, to which a server is permanently connected, which server functions as an issuing computer
10 2 for admission codes by means of which admission to one or more events can be obtained. When a consumer wishes to visit one of said events, he can contact the Internet 1 via his home computer by means of a modem, and input the Internet address (URL) of the server in question
15 into his browser. His computer screen will then display a web page on which the various events are being offered.

The consumer can state his selection and also indicate
20 certain preferences, such as the number of persons, the date, the time, the circle, etc. Then the total sum of the transaction will be displayed, which can subsequently be paid by the consumer, for example by means of a credit card or a coupon system, whereby a
25 protected transmission procedure is used.

Once this has been done, the transaction is completed in that an admission code is sent to the consumer's home computer 3 by the issuing computer 2, which admission
30 code, in this embodiment in the form of a bar code representing an alphanumeric sequence of twenty characters, is displayed on the screen. The sending of the admission code likewise takes place in a protected manner. Optionally, if the consumer states an e-mail
35 address, the admission code is also transmitted by protected e-mail, so that the admission code will not be lost in the unhoped-for event that the web page should

prematurely disappear from the screen.

Then the consumer can print out the admission code, in
the form of a bar code, on his own printer 4, whereby it
5   is also possible to print additional information, such
as the date, the starting time and the end time of the
period during which the consumer must check in, a
possible number of the entrance gate at which he must
check in, as well as a possible seat number, as a result
10   of which an admission ticket comprising a unique
admission code is created, as it were. If several
admission codes have been purchased simultaneously for
different events, or for several persons, these codes
can be printed in a corresponding manner.

15

Now the procedure used for issuing the admission codes will be
explained with reference to Figures 2, 3 and 4. As already
discussed before, an admission code as used in the present
embodiment consists of 20 alphanumeric characters. Sets 10, 20
20 represent all possible codes that consist of 20 alphanumeric
characters, the so-called format that is prescribed for a code.
Subsets 11, 21 represent the set of admission codes that can be
issued for a specific event, and thus also determine the
maximum number of consumers that can visit the event.

25

With the prior art method of issuing admission codes via the
Internet as described in the introduction, the admission codes
constitute a continuous, non-random subset 11 of a complete set
10, for example in that the code is incremented by one with
30 each new code that is to be issued. It is quite simple thereby
to predict a next admission code once one or a few admission
codes are known. When such a method is used, it is therefore
necessary to check at the entrance whether the admission code
in question has in actual fact been issued, and also to check
35 by means of an identity card whether the correct person is
checking in with said admission code, in order to prevent a
forger being granted admission with an admission code that has

been issued to someone else. Consequently, a current list of actually issued admission codes and the associated names of consumers needs to be available at the entrance to the event.

The need for the above-described laborious additional protection can be obviated, as schematically shown in Figure 3, by making sure that it is not possible to predict an admission code on the basis of one or more other admission codes, in other words, that the admission codes are determined in a random or semi-random fashion, and furthermore ensuring that the subset of admission codes 21 is so small in comparison with the complete set 20 that the risk that a code that has been selected at random is an admission code is very small. With a format of 20 alphanumeric characters (36 possible characters for each position, A .. Z, 0 .. 9) the complete set 10, 20 consists of $1.34 \times 10^{31}$ codes, so that, given a maximum number of visitors of 100,000, the chance of a potential forger finding the correct admission code by a chance is only $1 : 1.34 \times 10^{31}$ per attempt.

20

Referring to Figure 4, a specific procedure is used for determining a pseudo-random subset of admission codes 21. The starting point is a subset of "results" 31. The term results will be explained hereafter. In the embodiment said results 31 are composed of an entrance gate number, an admission date, an admission time segment, a serial number and four filter codes. Overall said result comprises 15 characters. Results 31 constitute a non-random subset 31 of a complete set 30. Upon issue of the admission codes as described with reference to Figure 1, a first result is retrieved from the memory of issuing computer 2 and at the same time blocked for a next issue.

Then the result is converted into a pseudo-random admission code, as indicated by the arrows in Figure 4, by means of a logic operation, which consists of various steps in accordance with a specific routine, which depends on the entrance

gate/admission date/admission time segment combination. The operation routine may comprise a well-known technique from the field of cryptology.

In the embodiment, the operation routine successively comprises the changing of positions of characters (for example the first character to the third position, the second character to the eleventh position, the third character to the second position, etc.), and the substitution of characters (for example A for Y, B for Z, C for 1, D for 2, etc.). The first two filter codes must be used thereby in order to determine which changing step and which substitution step are to be used. Then an alphanumerical check number consisting of five characters is determined from the obtained code, with which the original result is extended to a total of twenty characters. Following that, another changing step and another substitution step are carried out, which are determined by the third and fourth filter codes. Since there are four filter codes, $36^4$ (over 1.4 million) different operation routines are possible, which provides adequate protection against the system being hacked.

Thus a pseudo-random admission code is obtained, which is transmitted to the consumer's home computer via the Internet and which can be printed out by the consumer.

25

Pseudo-random means that statistically the subset of admission codes 21, which is obtained by subjecting all elements of subset 31 to the logic operation, is hardly distinguishable, if at all, from a truly random subset, in spite of being derived from a non-random set.

The consumer subsequently checks in with his printed code at the indicated entrance gate in the indicated time segment. Figure 5 shows an admission control system, which consists of an admission computer 40, which is connected to a number of entrance gates 41. Stored in the memory of admission computer 40 is an associated operation routine for every entrance

gate/admission date/admission time segment combination that is possible. Consequently, there is no need for the admission codes themselves or the actually issued admission codes or the original serial numbers that form the basis thereof to be stored in the memory.

The operation routine that is used is the inverse of the operation routine that has been used by the computer when issuing admission codes for this entrance gate/admission date/admission time segment combination.

The consumer holds his code, which is printed in the form of a bar code, before an optical scanner 42, as a result of which the code is read into the memory of admission computer 40. Then the code that has been read is subjected to the operation routine, which is valid for the entrance gate in question at that point in time. Since this operation routine is the inverse of the operation routine by means of which the original result was converted into an admission code by the issuing computer, it follows that the computer will convert the presented code into a "result" consisting of, among other things, an entrance gate number, an admission date and an admission time segment.

If the above three data tally with the facts that apply at that moment, it is established that the code being presented is an admission code, and the consumer is granted admission. The check as regards the gate number, for example, can be selectively deactivated, for example when an entrance gate is defective and it is necessary to use an entrance gate other than the originally intended one. The serial number, which is also included in the result, is stored in the memory of the admission computer after the check has been carried out, thus making it possible to check whether admission has been granted on the basis of an admission code before already. This makes it possible to prevent two people being granted admission on the basis of an admission code they have copied from each other. By including this protection message in the transmission and

having it printed out upon issue of the admission code, the copying of admission codes is discouraged, and the consumer is warned not to show his code to strangers lest it be copied.

Once it has been established that a presented code is an admission code and admission has not been granted before, a barrier 43 connected to the admission computer 40, for example a turnstile, is unlocked, thus granting the consumer admission to the event.

## CLAIMS

1. A method for granting admission to an event, wherein an admission code is issued to a consumer via a distribution
5 channel, which admission code is in accordance with a predetermined format and which forms part of a set of admission codes, which set of admission codes forms a predetermined random or pseudo-random subset of all codes having the predetermined format, wherein it is checked at
10 the entrance to the event whether a code presented by a consumer is part of the set of admission codes.

2. A method according to claim 1, wherein the code is placed on a carrier after receipt by the consumer.
15
3. A method according to claim 2, wherein said code is placed on said carrier by means of a printer.

4. A method according to claim 1, 2 or 3, wherein said code
20 comprises a bar code.

5. A method according to any one of the preceding claims, wherein said distribution channel comprises the Internet.

6. A method according to any one of the preceding claims, wherein the event is part of the set consisting of a sports event, a concert, a day in an amusement park, a cinema show, a theatre show, a fair, a symposium, a boat trip, a rail journey, a bus journey or a flight.
30
7. A method according to any one of the preceding claims, wherein an entrance gate is unlocked or locked in dependence on the result of the check.

8. A method according to any one of the preceding claims, wherein the presented code is input into the admission computer at the entrance to the event by means of an input

apparatus.

9.  A method according to claim 8, wherein said input apparatus is an optical scanner.

10. A method according to any one of the preceding claims, wherein the check at the entrance is carried out by the admission computer, which carries out a logic operation on the presented code, the result of which logic operation is compared with a predetermined set of results stored in the memory of the computer.

11. A method according to claim 10, wherein said result comprises an identification of an entrance gate and/or an admission date and/or an admission time segment and/or a seat number and/or a serial number.

12. A method according to claim 10 or 11, wherein the issuing computer processes can selectively carry out the comparison between the result and the set of predetermined results on part of the result.

13. A method according to claim 10, 11 or 12, wherein said routine for the logic operation is changed periodically.

14. A method according to any one of the claims 10 - 13, wherein the admission code is determined upon being issued by an issuing computer by retrieving a result from said predetermined set of results and to subject said result to the inverse of the logic operation that will be used at the moment of admission.

15. A method according to claim 14, wherein the issuing computer processes a result into an admission code only once.

16. A method according to any one of the preceding claims,

wherein at least one characteristic part of the presented
admission code and/or the associated result, for example
the serial number, is stored in a memory of the admission
computer, and said admission code is then excluded from
5      admission.

17.    An admission control system for implementing the method
       according to any one of the preceding claims, comprising
       an admission computer, which includes means for checking
10     whether an input code is part of a set of admission codes,
       which set of admission codes forms a predetermined random
       or pseudo-random subset of all codes having a
       predetermined format.

18.    An admission control system according to claim 17, wherein
       said admission computer includes means which are capable
       of carrying out a logic operation on the input code, and
       of comparing the result thereof with a predetermined set
       of results stored in the memory of the computer.
20
19.    An admission control system according to claim 17 or 18,
       furthermore comprising at least one entrance gate, which
       can be unlocked or locked in dependence on the result of
       the check.
25
20.    An issuing computer intended for implementing the method
       according to any one of the claims 1 - 16, including means
       that verify whether the admission code is in accordance
       with a predetermined format and forms an element of a set
30     of admission codes, which set of admission codes forms a
       predetermined random or pseudo-random subset of all codes
       having said predetermined format.

21.    An issuing computer according to claim 20, furthermore
35     including means which are capable of determining the
       admission code by retrieving a result from a predetermined
       set of results and to subject said result to the inverse

of the logic operation that can be used at the moment of
admission by an admission control system admission code
cording to claim 18 or 19.

22. A carrier on which an admission code has been placed in
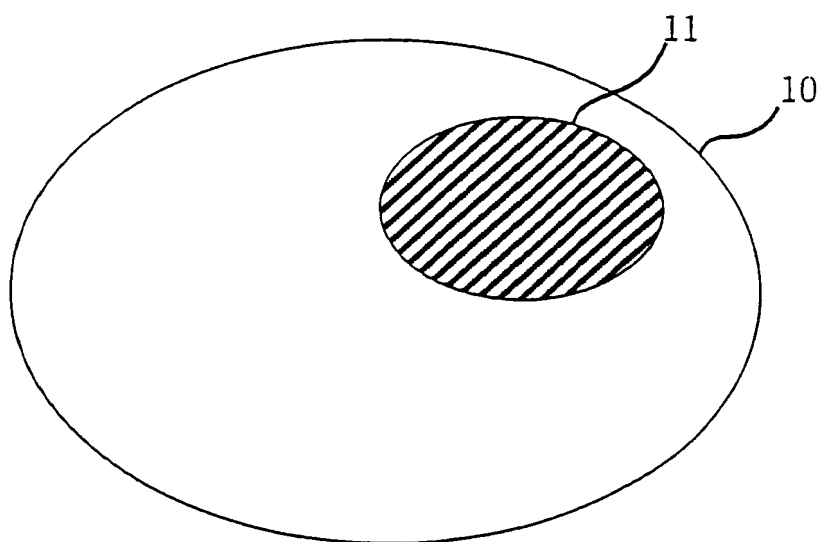accordance with the method according to any one of the
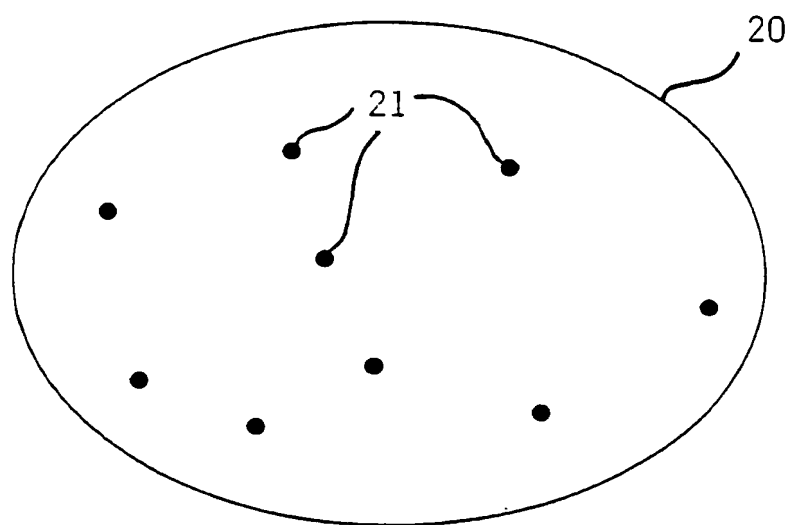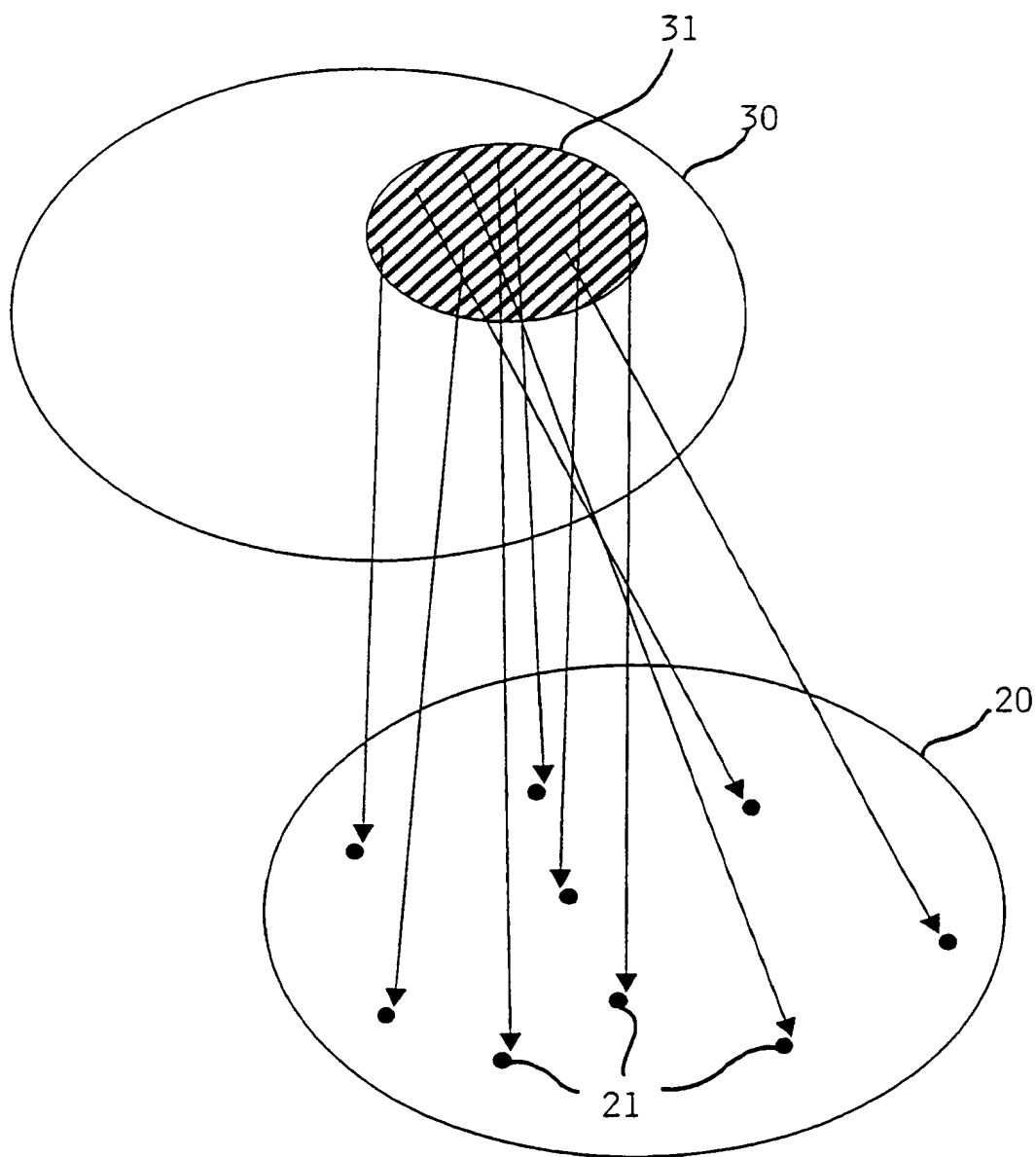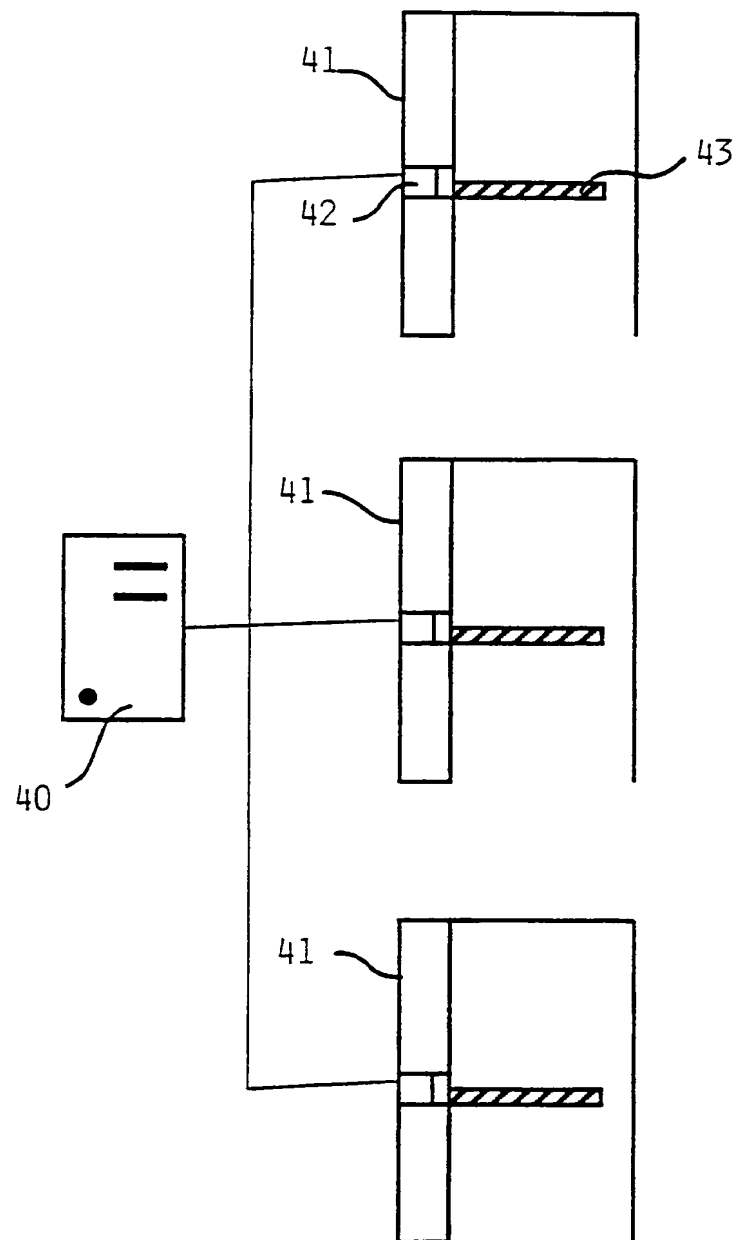claims 1 - 16.
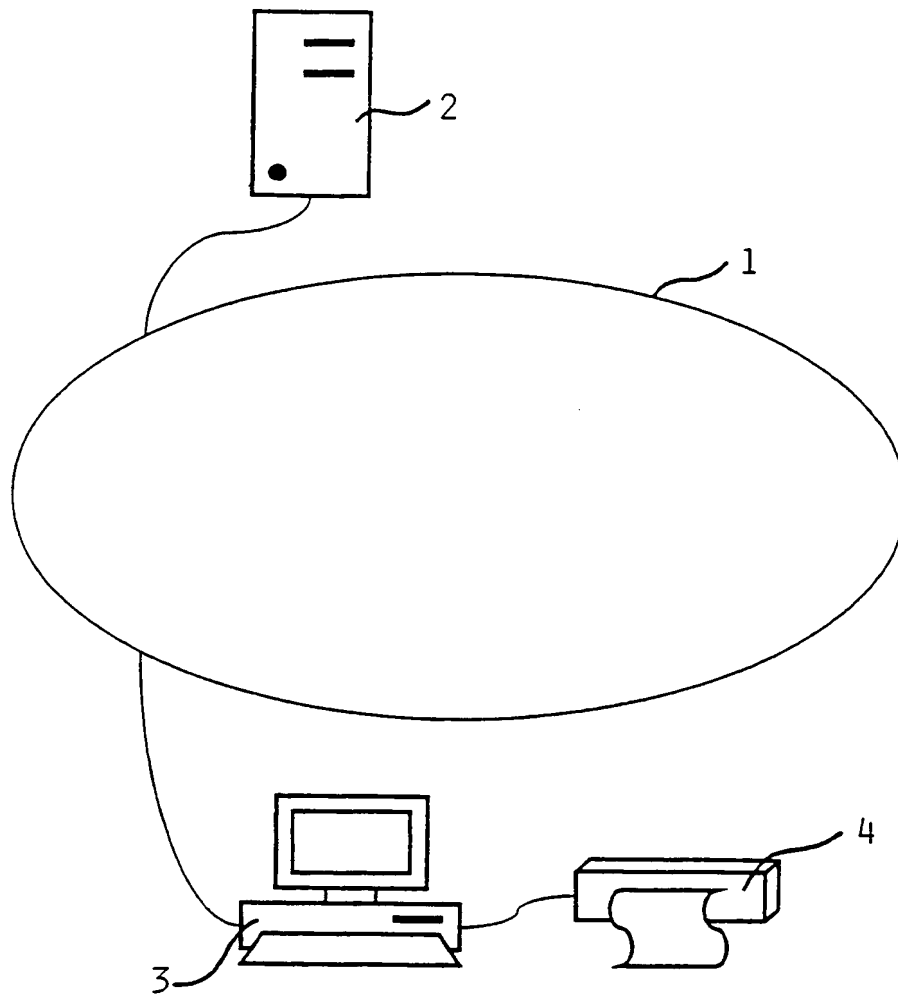
2

1

4

3

**FIG. 1**

**FIG. 2**



**FIG. 3**

**FIG. 4**

**FIG. 5**

*14*

# PATENT COOPERATION TREATY

# PCT

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

## (PCT Article 36 and Rule 70)

| Applicant's or agent's file reference<br><br>? | **FOR FURTHER ACTION** | See Notification of Transmittal of International<br>Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| International application No.<br>PCT/NL00/00576 | International filing date *(day/month/year)*<br>18/08/2000 | Priority date *(day/month/year)*<br>26/08/1999 |

| International Patent Classification (IPC) or national classification and IPC |
|---|
| G07B15/00 |

| Applicant |
|---|
| TICKET DIRECT B.V. et al. |

1.  This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2.  This REPORT consists of a total of 7 sheets, including this cover sheet.

    ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

    These annexes consist of a total of  sheets.

3.  This report contains indications relating to the following items:

    I     ☒    Basis of the report

    II    ☐    Priority

    III   ☐    Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

    IV    ☐    Lack of unity of invention

    V     ☒    Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement

    VI    ☐    Certain  documents cited

    VII   ☒    Certain defects in the international application

    VIII  ☒    Certain observations on the international application

| Date of submission of the demand<br><br>26/03/2001 | Date of completion of this report<br><br>19.11.2001 |
|---|---|
| Name and mailing address of the international preliminary examining authority:<br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0  Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br><br>van der Haegen, D<br><br>Telephone No. +49 89 2399 2683 |

Form PCT/IPEA/409 (cover sheet) (January 1994)

# INTERNATIONAL PRELIMINARY
# EXAMINATION REPORT

## I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
**Description, pages:**

    1-11                        as originally filed


    **Claims, No.:**

    1-22                        as originally filed


    **Drawings, sheets:**

    1/4-4/4                     as originally filed



2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

    These elements were available or furnished to this Authority in the following language:    , which is:

    ☐   the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

    ☐   the language of publication of the international application (under Rule 48.3(b)).

    ☐   the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

    ☐   contained in the international application in written form.

    ☐   filed together with the international application in computer readable form.

    ☐   furnished subsequently to this Authority in written form.

    ☐   furnished subsequently to this Authority in computer readable form.

    ☐   The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

    ☐   The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

    ☐   the description,        pages:
    ☐   the claims,             Nos.:

☐  the drawings,       sheets:

5.  ☐  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6.  Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.  Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 5, 10-14, 18, 21 |
| | No: | Claims | 1-4, 6-9, 15-17, 19-20, 22 |
| Inventive step (IS) | Yes: | Claims | |
| | No: | Claims | 1-22 |
| Industrial applicability (IA) | Yes: | Claims | 1-22 |
| | No: | Claims | |

2.  Citations and explanations
    **see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
**see separate sheet**

<u>**Re Item V**</u>
**Reasoned statement under Article 35(2) PCT with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1.     Reference is made to the following documents:

    D1:    WO 94 27258 A (INTERACTIVE TELEVISION SYSTEMS) 24 November 1994, and

    D2:    DE 197 43 630 A (DORTMUNDER STADTWERKE AG) 15 April 1999.

2.     **Article 33(2) PCT**

2.1    Document D1 is regarded as the most relevant prior art to the subject-matter of independent claims 1, 17, 20 and 22, and insofar as these claims can be understood (see Section VIII), this document shows the following features thereof:

    a)     a method for granting admission to an event whereby an admission code is issued to a consumer via a distribution channel and wherein the admission code is checked at the entrance to the event whether the admission code presented by a consumer is part of a set of admission codes (see eg. page 7, lines 13-31; page 17, line 14 - page 18, line 11; page 24, lines 3-29; page 25, lines 26-32),

    b)     an admission control system comprising an admission computer which includes means for checking whether an admission code is part of a set of admission codes (see eg. figure 1, reference signs 10, 150, 160 and 170; page 7, lines 13-31; page 17, line 14 - page 18, line 11; page 24, lines 3-29; page 25, lines 26-32),

    c)     an issuing computer including means that verify whether the admission is in accordance with a predetermined format and forms an element of a set of admission codes (see eg. page 7, lines 13-31; page 17, line 14 - page 18, line 11; page 24, lines 3-29; page 25, lines 26-32), and

d)      a carrier on which an admission code has been placed (see eg. page 8, line 31 - page 9, line 5; page 20, lines 14-21; page 24, line 30 - page 25, line 8).

2.2     Hence, document D1 discloses in combination all features of the subject-matter of claims 1, 17, 20 and 22. The subject-matter of said claims is therefore not new.

2.3     The features introduced by the subject-matter of claims 2-4, 6-9, 15-16 and 19 are known from D1 (see eg. page 24, line 30 - page 25, line 8; page 1, lines 4- 8; page 7, lines 13-31; page 17, line 14 - page 18, line 11; page 24, line 3 - page 25, line 8; page 25, lines 26-32) and do not, therefore, add any matter to claim 1 resp. 17 that renders it novel.

3.      **Article 33(3) PCT**

3.1     When the raised clarity (see Section VIII) and novelty objections were to be overcome, the subject-matter of the independent claims 1, 17, 20 and 22 would still lack an inventive step. The reason being as following:

D1 discloses an admission code that is in accordance with a predetermined format and which forms part of a set of admission codes (see eg. page 7, lines 13-31; page 17, line 14 - page 18, line 11; page 24, lines 3-29; page 25, lines 26-32) from which the subject-matter of the independent claims only differs in that said set of admission codes forms a predetermined, (pseudo-)random subset of all admission codes having the predetermined format.

The problem to be solved by the present invention may therefore be regarded as to minimise the risk of fraud.

However, these features have already been employed for the same purpose in a similar method and system for granting admission to an event, see document D2, column 2, lines 55-65. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method and system according to document D1, thereby arriving at a method and system according to claims 1, 17, 20 and 22. The subject-matter of these claims would therefore not involve an inventive step.

3.2   The features introduced by the subject-matter of claim 5 are known from D2. The skilled person would therefore regard it as a normal design option to include this feature in the method and system described in document D1 in order to solve the problem underlying claim 5. The subject-matter of claim 5 does not add any matter to claim 1 that involves an inventive step.

3.3   The subject-matter of claims 10-14, 18 and 21 appears to come down to encryption, decryption and the related key-management. Cryptology is well-known to those skilled in the art and, as can be seen in the available prior art, is frequently used in admission control systems of the type of the present application. The subject-matter of claims 10-14, 18 and 21 does not, therefore, add any matter to claims 1, 17 resp. 20 that involves an inventive step.

4.   **Article 33(4) PCT**

The subject-matter of claims 1-22 is industrial applicable.

**Re Item VII**
**Certain defects in the international application**

1.   Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.

2.   The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT.

3.   The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

**Re Item VIII**
**Certain observations on the international application**

1.   Claims 1, 17, 20 and 22 are construed as directed to a method, an admission control system, an issuing computer and a carrier for use with an admission code

of a particular kind. In accordance with the provisions of the PCT International Preliminary Examination Guidelines, III-4.8 and IV-7.6, the features relating to the admission code are non-distinctive and are, therefore, to be disregarded when assessing novelty. Moreover, claims 1, 17, 20 and 22 lack clarity as a result of the presence of these non-distinctive features (Article 6 PCT).

2.   When a claim is directed to a method, it may define certain features in terms of another category, for example an apparatus, if a clear differentiation between the apparatus and the method is maintained. This requirement is not met by claim 1. Claim 1 does not, therefore, meet the requirements of Article 6 PCT.

3.   The applicant's attention is drawn to the fact that an objection of lack of unity (Rule 13 PCT) may arise, once the objections under Article 33(2) and (3) PCT have been overcome.

The following groups of claims are considered: 1) claims 1-16, 2) claims 17-19, 3) claims 20-21 and 4) claim 22.

Unity appears to be present between groups 1 and 2 and between groups 1 and 3. There is no unity, however, between groups 2 and 3, 1 and 4, 2 and 4, 3 and 4, since neither the same nor a corresponding special technical feature (Rule 13.2 PCT) is common to said groups.

**PCT REQUEST**

3.XO49

| 0 0-1 | For receiving Office use only International Application No. | PCT/NL    00/00576 |
|---|---|---|
| 0-2 | International Filing Date | **18 AUG 2000**  ( 18. 08. 00 ) |
| 0-3 | Name of receiving Office and "PCT International Application" | BUREAU VOOR DE INDUSTRIËLE EIGENDOM P.C.T. INTERNATIONAL APPLICATION |

| 0-4 0-4-1 | Form - PCT/RO/101 PCT Request Prepared using | PCT-EASY Version 2.90 (updated 15.12.1999) |
|---|---|---|
| 0-5 | Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty | |
| 0-6 | Receiving Office (specified by the applicant) | Netherlands Industrial Property Office (RO/NL) |
| 0-7 | Applicant's or agent's file reference | 3.XO49 |
| I | Title of invention | ISSUING COMPUTER, ADMISSION CONTROL SYSTEM AND METHOD FOR GRANTING ADMISSION TO AN EVENT |
| II II-1 | Applicant This person is: | applicant only |
| II-2 | Applicant for | all designated States except US |
| II-4 | Name | TICKET DIRECT B.V. |
| II-5 | Address: | Burg. Stramanweg 104 NL-1101 AA AMSTERDAM Netherlands |
| II-6 | State of nationality | NL |
| II-7 | State of residence | NL |
| III-1 III-1-1 | Applicant and/or inventor This person is: | applicant and inventor |
| III-1-2 | Applicant for | US only |
| III-1-4 | Name (LAST, First) | EILANDER, Johan, Peter |
| III-1-5 | Address: | Boeierstraat 44 NL-1435 LL RIJSENHOUT Netherlands |
| III-1-6 | State of nationality | NL |
| III-1-7 | State of residence | NL |

PCT/NL  00/00576

**PCT REQUEST**

Original (for **SUBMISSION**) - printed on 18.08.2000  03:47:16 PM

3.XO49
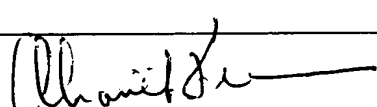
| III-2 | **Applicant and/or inventor** | |
|---|---|---|
| III-2-1 | This person is: | applicant and inventor |
| III-2-2 | Applicant for | US only |
| III-2-4 | Name (LAST, First) | SMIT, Hendrikus, Martinus |
| III-2-5 | Address: | Korenmolen 78 NL-1622 JD HOORN Netherlands |
| III-2-6 | State of nationality | NL |
| III-2-7 | State of residence | NL |
| IV-1 | **Agent or common representative; or address for correspondence** The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: | agent |
| IV-1-1 | Name (LAST, First) | HOOIVELD, Arjen, Jan, Winfried |
| IV-1-2 | Address: | Sweelinckplein 1 NL-2517 GK THE HAGUE Netherlands |
| IV-1-3 | Telephone No. | 020 6444000 |
| IV-1-4 | Facsimile No. | 020 6444800 |
| V | **Designation of States** | |
| V-1 | Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned) | AP: GH GM KE LS MW SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT |
| V-2 | National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned) | AE AL AM AT AU AZ BA BB BG BR BY CA CH&LI CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW |

**PCT/NL** 00/00571

**PCT REQUEST**

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3.XO49

| V-5 | **Precautionary Designation Statement** In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. | |
|---|---|---|
| V-6 | **Exclusion(s) from precautionary designations** | **NONE** |
| VI-1 | **Priority claim of earlier national application** | |
| VI-1-1 | Filing date | **26 August 1999 (26.08.1999)** |
| VI-1-2 | Number | **1012914** |
| VI-1-3 | Country | **NL** |
| VI-2 | **Priority document request** The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s): | **VI-1** |
| VII-1 | **International Searching Authority Chosen** | **European Patent Office (EPO) (ISA/EP)** |
| VII-2 | **Request to use results of earlier search; reference to that search** | |
| VII-2-1 | Date | **09 May 2000 (09.05.2000)** |
| VII-2-2 | Number | **SN 34086 NL** |
| VII-2-3 | Country (or regional Office) | **EP** |

| VIII | **Check list** | number of sheets | electronic file(s) attached |
|---|---|---|---|
| VIII-1 | Request | **4** | − |
| VIII-2 | Description | **12** | − |
| VIII-3 | Claims | **4** | − |
| VIII-4 | Abstract | **1** | **3xo49abs.txt** |
| VIII-5 | Drawings | **4** | − |
| VIII-7 | TOTAL | **25** | |

| | **Accompanying items** | paper document(s) attached | electronic file(s) attached |
|---|---|---|---|
| VIII-8 | Fee calculation sheet | ✓ | − |
| VIII-16 | PCT-EASY diskette | − | **diskette** |
| VIII-18 | **Figure of the drawings which should accompany the abstract** | **1** | |
| VIII-19 | **Language of filing of the international application** | **Dutch** | |
| IX-1 | **Signature of applicant or agent** | | |
| IX-1-1 | Name (LAST, First) | **HOOIVELD, Arjen, Jan, Winfried** | |

PCT/™_   00 / 00576

**PCT REQUEST**

3.XO49

Original (for **SUBMISSION**) - printed on 18.08.2000  03:47:16 PM

## FOR RECEIVING OFFICE USE ONLY

| 10-1 | Date of actual receipt of the purported international application | **18 AUG 2000**  ( 1 8. 08. 00 ) |
|------|------|------|
| 10-2 | Drawings: | |
| 10-2-1 | Received | *Received.* |
| 10-2-2 | Not received | |
| 10-3 | Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application | |
| 10-4 | Date of timely receipt of the required corrections under PCT Article 11(2) | |
| 10-5 | International Searching Authority | ISA/EP |
| 10-6 | Transmittal of search copy delayed until search fee is paid | |

## FOR INTERNATIONAL BUREAU USE ONLY

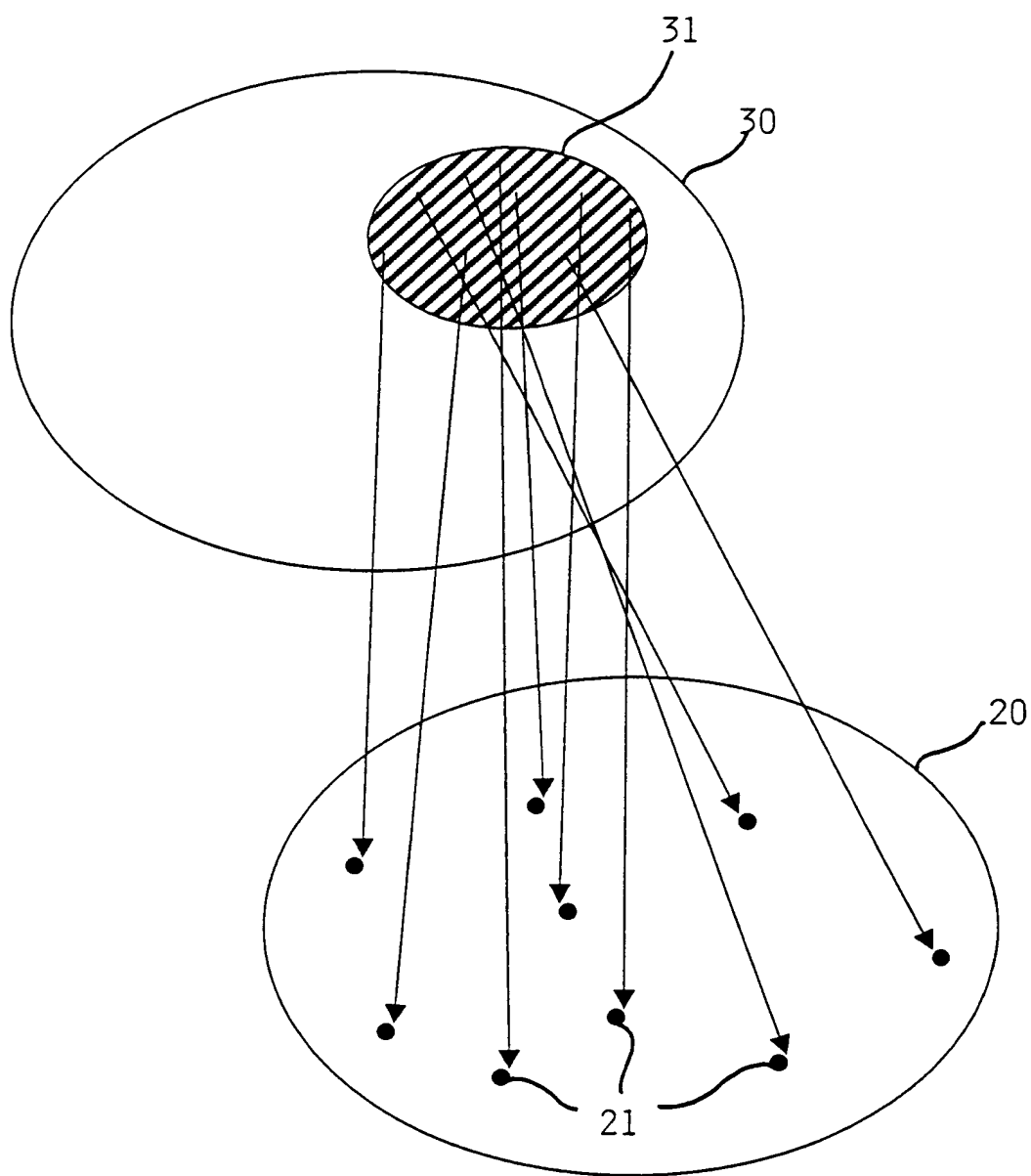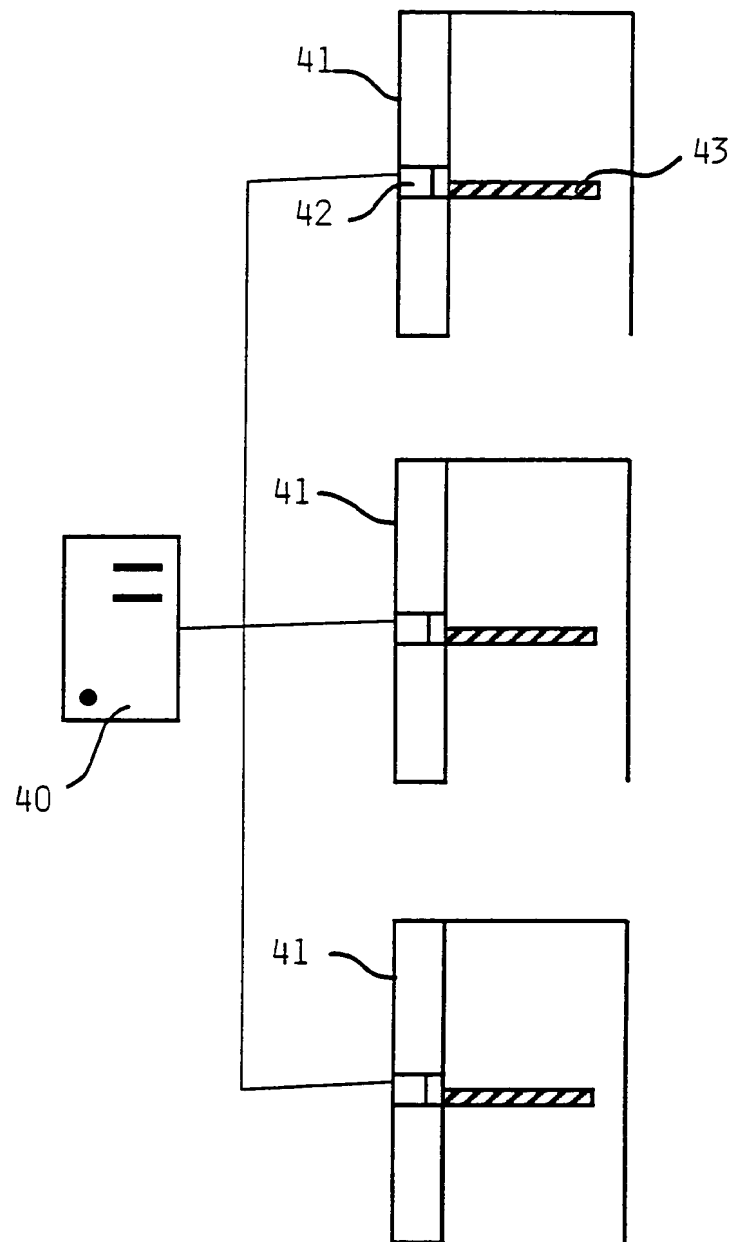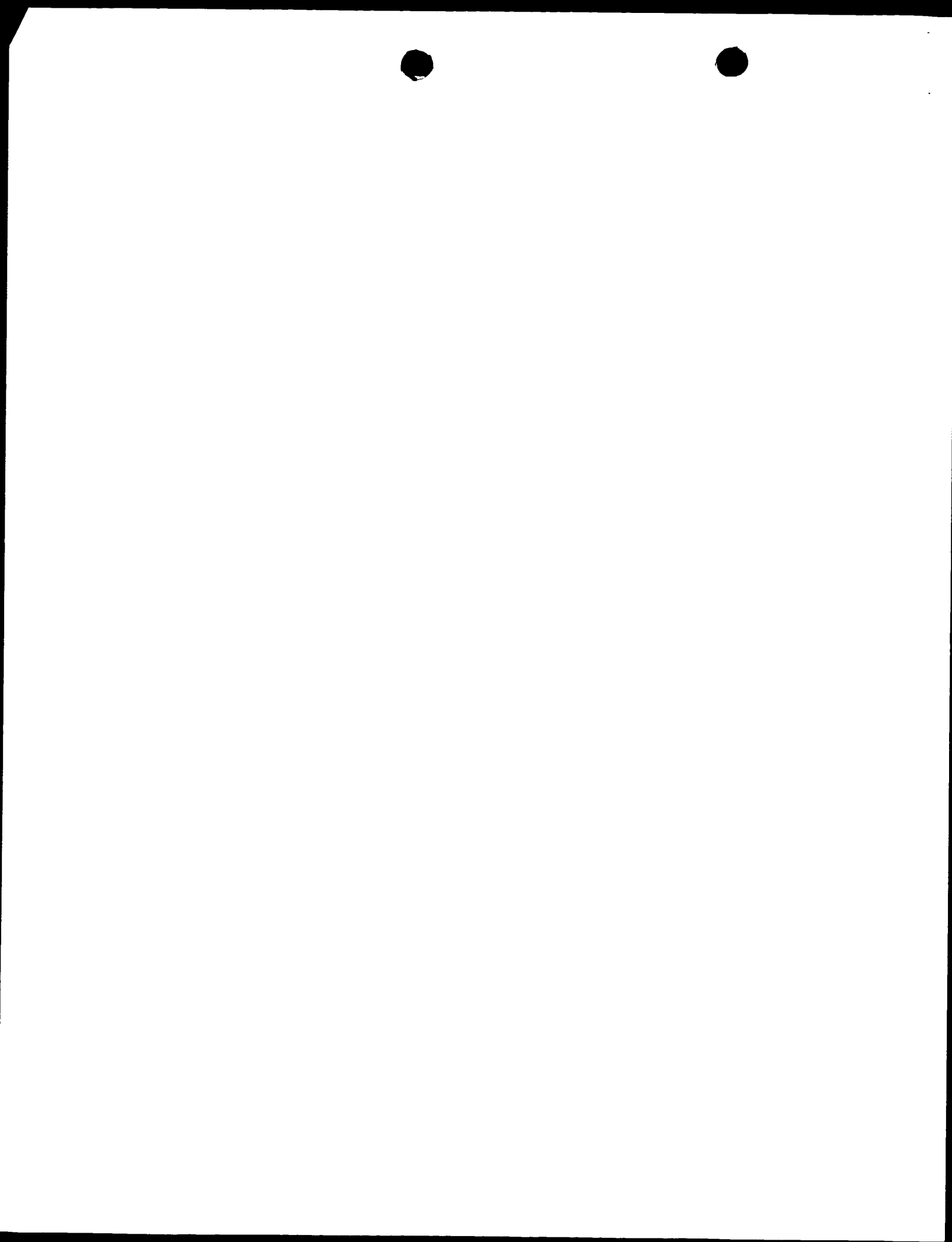| 11-1 | Date of receipt of the record copy by the International Bureau | **08 SEPTEMBER 2000**   ₤ 0 8. 09. 00 |
|------|------|------|
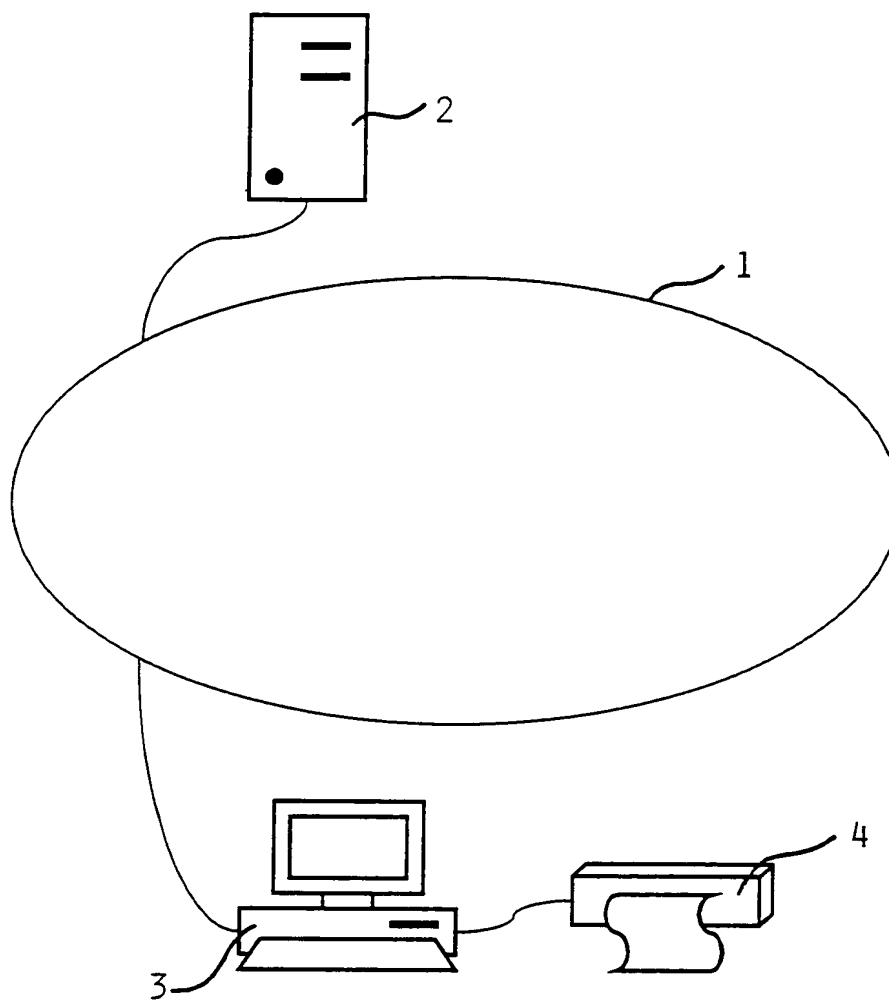
**FIG. 1**
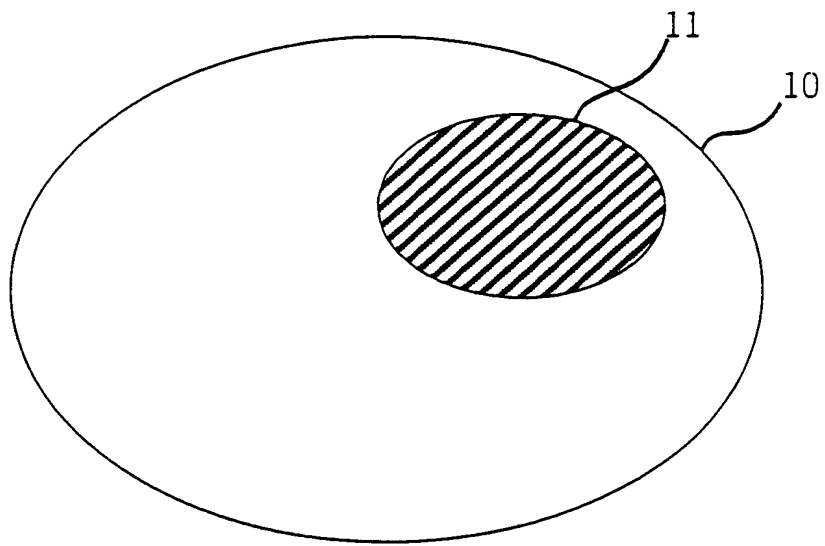
**FIG. 2**
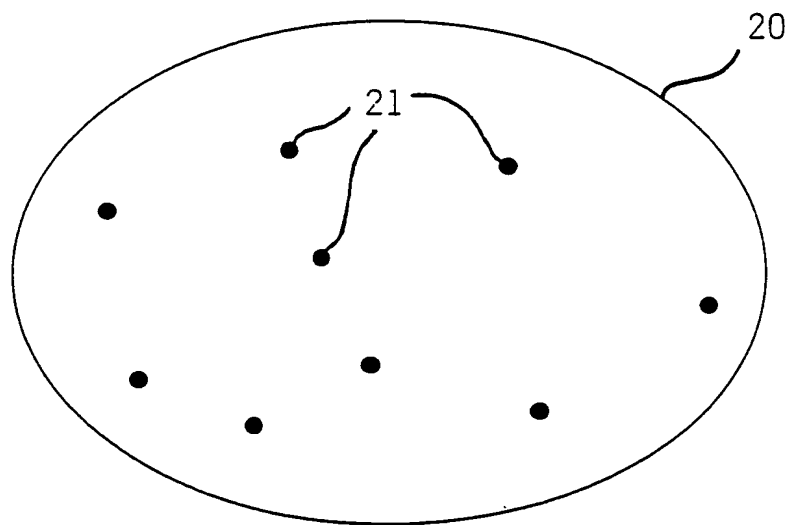


**FIG. 3**

**FIG. 4**

**FIG. 5**

UITG●ECO. ●TER, TOEGANGSCONTR●SYSTEEM EN WERKWIJZE
VOOR HET VERSCHAFFEN VAN TOEGANG TOT EEN EVENEMENT

De onderhavige uitvinding heeft betrekking op een
5 werkwijze voor het verschaffen van toegang tot een
evenement, waarbij via een distributiekanaal een
toegangscode wordt verstrekt aan een consument, welke
toegangscode voldoet aan een vooraf bepaald formaat en
welke toegangscode element is van een verzameling
10 toegangscodes. Een code met een vooraf bepaald formaat
kan bijvoorbeeld een getal of een alfanumerieke reeks
met een vooraf bepaald aantal posities zijn. Opgemerkt
wordt dat onder een evenement in dit verband ook een
reis verstaan dient te worden.

15

Een dergelijke werkwijze is bekend, bijvoorbeeld bij het
verschaffen van toegang tot vliegtuigen zoals gehanteerd
door onder andere de Britse luchtvaartmaatschappij
EasyJet Airlines Company. Hierbij kan een consument via
20 internet een vliegticket bestellen en bijvoorbeeld
betalen met een credit card, waarbij eveneens via het
internet een toegangscode van bijvoorbeeld 6
alfanumerieke tekens wordt verzonden, die de consument
op zijn printer kan uitprinten. Bij de toegang tot het
25 vliegtuig dient de passagier deze toegangscode te tonen,
en wordt deze code vergeleken met de lijst verstrekte
codes. Indien de aangeboden code op de lijst voorkomt en
bovendien de naam in het paspoort van de passagier
overeenkomt met de naam op de lijst, wordt toegang tot
30 het vliegtuig verleend.

Het bezwaar van deze bekende werkwijze is, dat men bij
de ingang van het vliegtuig dient te beschikken over een
actuele en complete lijst met alle verstrekte
35 toegangscodes, waardoor het noodzakelijk is om bij de
ingang van het vliegtuig een on-line verbinding met de
uitgiftecomputer te hebben, dan wel ruim van te voren te
stoppen met de uitgifte van toegangscodes en de
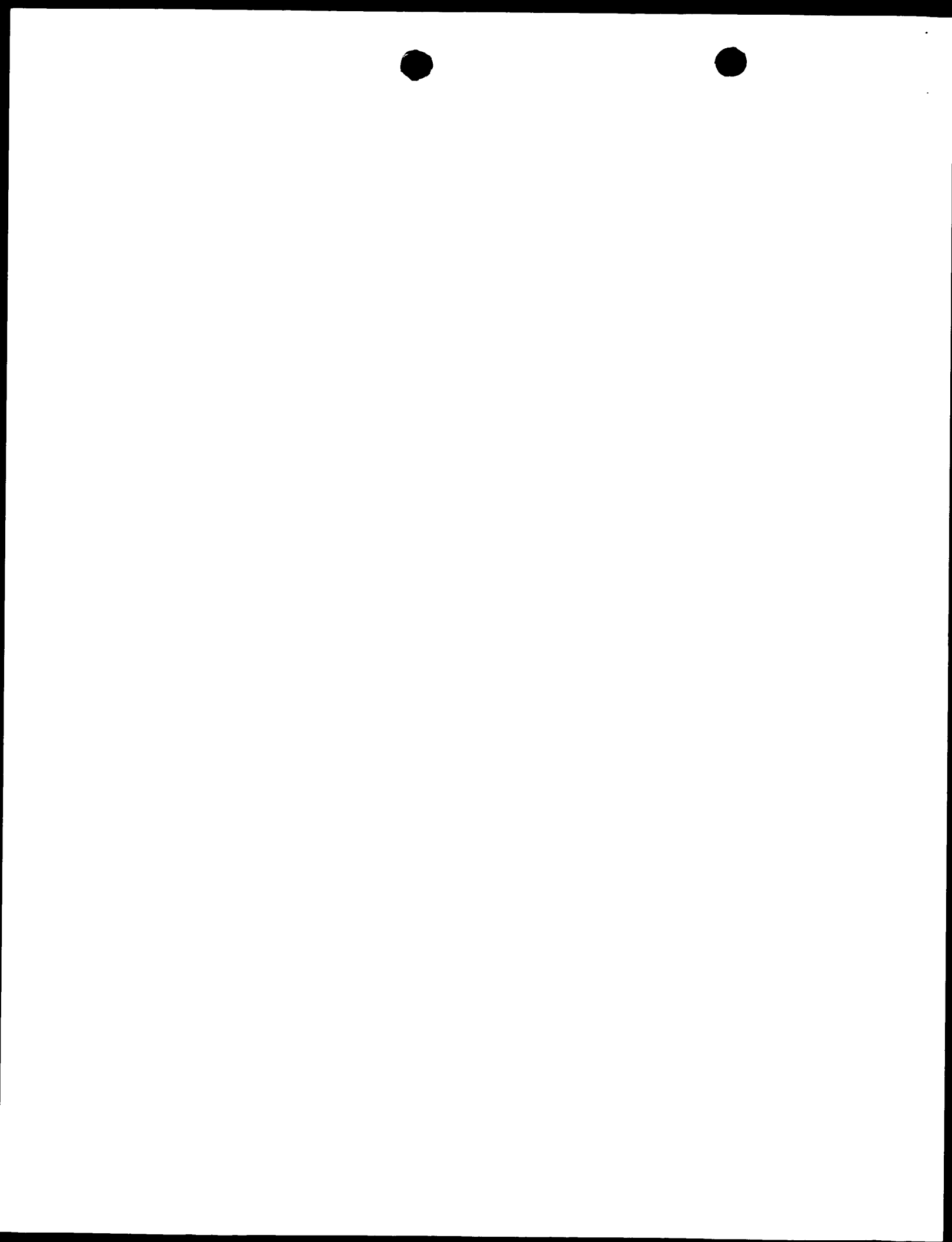
verstrekte toegangscodes naar het geheugen van de
computer bij de toegang van het vliegtuig over te
brengen. Bovendien is de kans op fraude, doordat een
opeenvolgende reeks toegangscodes wordt verstrekt,

5    dermate groot, dat een bewerkelijke extra controle,
zoals de paspoortcontrole, bij een dergelijke werkwijze
noodzakelijk is. Een dergelijke werkwijze is bovendien
minder geschikt voor evenementen waarbij het tonen van
identiteitsbewijzen bij de toegang niet gebruikelijk is.

10

Doel van de uitvinding is een goedkope, snelle,
eenvoudige en efficiënte wijze van verschaffen van
toegang tot een evenement, waarbij de kans op fraude
wordt geminimaliseerd en waarbij geen extra controles

15   nodig zijn.

Daartoe wordt volgens de werkwijze de verzameling
toegangscodes gevormd door een vooraf bepaalde
willekeurige of pseudo-willekeurige deelverzameling van

20   alle codes die voldoen aan het vooraf bepaalde formaat,
waarbij bij de toegang tot het evenement en/of de reis
wordt gecontroleerd of een door een consument aangeboden
code behoort tot de verzameling toegangscodes. Deze
verzameling toegangscodes hoeft volgens de uitvinding

25   niet de verzameling werkelijk verstrekte toegangscodes
te representeren, doch mag de gehele verzameling vooraf
bepaalde toegangscodes omvatten, al of niet verstrekt.

Indien de deelverzameling toegangscodes ten opzichte van
30   de totaalverzameling van alle codes die aan het formaat
voldoen maar voldoende klein is, en er tegelijkertijd
voor wordt gezorgd dat de verzameling toegangscodes geen
voor de hand liggende reeks (met andere woorden, een
willekeurige of pseudo-willekeurige reeks) vormt, is de
35   kans dat iemand zelf een code bedenkt en aanbiedt die
behoort tot de verzameling toegangscodes zeer klein,
namelijk in de ordegrootte van de verhouding tussen het
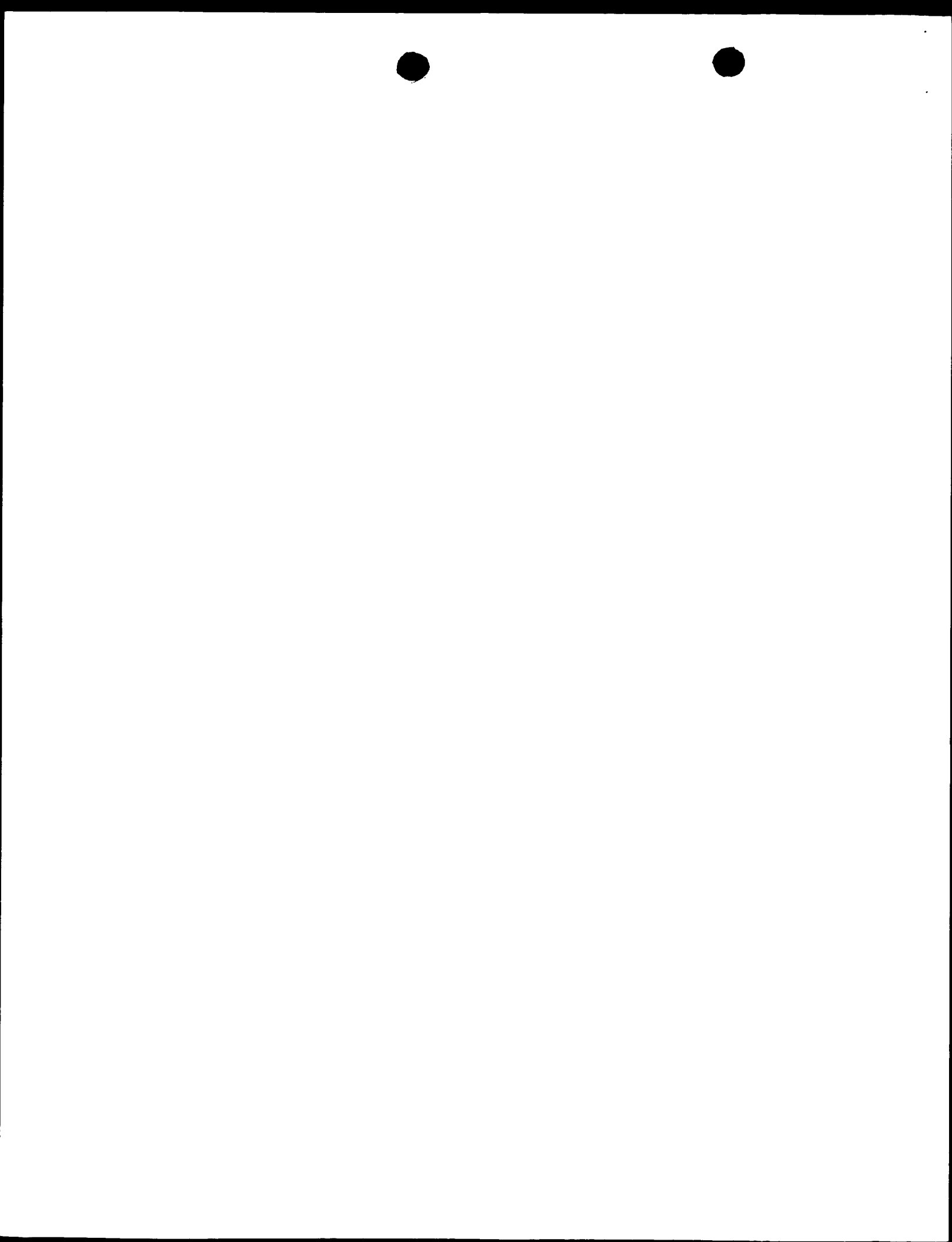
aantal elementen van de deelverzameling en de
totaalverzameling. Het is derhalve eenvoudig deze
verhouding zeer klein te maken, door de toegangscode een
formaat van bijvoorbeeld 20 alfanumerieke tekens te
5   geven, wat meer dan $10^{31}$ mogelijke codes geeft, bij een
maximum aantal toegangscodes van bijvoorbeeld 100.000,
en ervoor te zorgen dat de verzameling toegangscodes een
zo willekeurig mogelijke deelverzameling vormt van de
totaalverzameling.

10

Bij voorkeur wordt na ontvangst door de consument de
code aangebracht op een drager, bij voorkeur door middel
van een printer. Bij voorkeur omvat de code een
streepjescode, welke bijvoorbeeld de genoemde
15  alfanumerieke reeks representeert. Bij voorkeur omvat
het distributiekanaal het internet. Deze
voorkeursuitvoeringen zorgen voor een
consumentvriendelijke, eenvoudige en snelle verstrekking
van de codes, welke vervolgens eenvoudig aan controle te
20  onderwerpen zijn.

De uitvinding is vooral van voordeel als het evenement
bestaat uit een sportevenement, een concert, een dag in
een attractiepark, een bioscoopvoorstelling, een
25  theatervoorstelling, een beurs, een symposium, een
bootreis, een treinreis, een busreis of een vliegreis.

Bij voorkeur wordt, afhankelijk van het resultaat van de
controle, een toegangspoort ontgrendeld of geblokkeerd.
30  Dit kan bijvoorbeeld automatisch gebeuren indien de
toegangspoort is gekoppeld aan een toegangscomputer
welke de controle uitvoert.

Bij de toegang tot het evenement wordt de aangeboden
35  code bij voorkeur door middel van een invoerapparaat,
bij voorkeur een optische scanner, ingevoerd in de
toegangscomputer, welke bij voorkeur de controle bij de

toegang uitvoert door een logische bewerking toe te
passen op de aangeboden code, waarvan de uitkomst wordt
vergeleken met een vooraf bepaalde verzameling
uitkomsten welke is opgeslagen in het geheugen van de
5  toegangscomputer.

Voordeel van deze werkwijze, waarbij niet de codes zelf
worden gecontroleerd, maar de uitkomsten van een
bewerking daarop, bijvoorbeeld een of meer bekende
10 cryptologische bewerkingen, is dat de uitkomsten zelf
wel een opvolgende, niet willekeurige reeks mogen
vormen, waarin deze allerlei informatie over het
evenement, bij voorkeur een identificatie van een
toegangspoort waar de consument de code dient aan te
15 bieden, een toegangsdatum, een toegangstijdsegment, een
stoelnummer en/of een volgnummer kan omvatten. Daarbij
kan de toegangscomputer bij voorkeur de vergelijking van
de uitkomst met de verzameling vooraf bepaalde
uitkomsten naar keuze uitvoeren op een gedeelte van de
20 uitkomst, zodat bijvoorbeeld de controle op het
toegangspoortnummer of datum en/of tijd naar believen
kan worden uitgeschakeld, in geval van bijzondere
omstandigheden.

25 Bij voorkeur wordt het voorschrift voor de logische
bewerking periodiek veranderd. Hierdoor worden eventuele
fraudeurs ontmoedigd om door middel van langdurige
analyse van de verstrekte toegangscodes het voorschrift
voor de logische bewerking te herleiden.
30
Bij voorkeur wordt de toegangscode bij het verstrekken
door een uitgiftecomputer bepaald door een uitkomst op
te halen uit de vooraf bepaalde verzameling uitkomsten
en op de uitkomst de inverse toe te passen van de
35 logische bewerking die op het moment van toegang zal
worden toegepast, waarbij de uitgiftecomputer een
uitkomst bij voorkeur slechts eenmaal bewerkt tot

toegangscode.

Zoals gezegd mag de verzameling uitkomsten een opeenvolgende reeks zijn, bestaande uit bijvoorbeeld een
5 toegangspoortnummer, een datum, een tijdvak en een volgnummer. Door op het moment van uitgifte de inverse toe te passen van de bewerking die bij het betreffende toegangspoortnummer, op de bepaalde datum, in het bepaalde tijdvak zal worden toegepast op de
10 toegangscode, wordt de juiste toegangscode verkregen die onder die condities toegang geeft tot het evenement. De enige gegevens die voor de controle noodzakelijkerwijs vooraf in de toegangscomputer moeten zijn geprogrammeerd, zijn dan het toegangspoortnummer, de
15 datum, het tijdvak en het voorschrift van de bewerking, en dus niet de (verstrekte) volgnummers.

Om te voorkomen dat een zelfde toegangscode voor een tweede maal kan worden gebruikt, wordt bij voorkeur ten
20 minste een kenmerkend deel van de aangeboden toegangscode en/of de bijbehorende uitkomst, bijvoorbeeld het volgnummer, opgeslagen in een geheugen van de toegangscomputer en wordt deze toegangscode daarna uitgesloten van toegang.
25
De uitvinding heeft tevens betrekking op een toegangscontrolesysteem en op een uitgiftecomputer bestemd voor het uitvoeren van de werkwijze volgens de uitvinding.
30
Tevens heeft de uitvinding betrekking op een drager waarop een toegangscode is aangebracht volgens de werkwijze van de uitvinding.

35 De uitvinding zal met verwijzing naar de figuren nader worden toegelicht aan de hand van een uitvoeringsvoorbeeld, welke slechts dient ter

illustratie.

Figuur 1 is een schematische weergave van het internet waarop een uitgiftecomputer en een thuiscomputer zijn
5    aangesloten;

Figuur 2 is een schematische weergave van een deelverzameling toegangscodes;

10    Figuur 3 is een schematische weergave van een andere deelverzameling toegangscodes;

Figuur 4 is een schematische weergave van een logische bewerking welke wordt toegepast op een deelverzameling
15    codes; en

Figuur 5 is een schematische weergave van een toegangscontrolesysteem.

20    Figuur 1 toont schematisch een computernetwerk, in dit geval het internet 1, waarop een server permanent is aangesloten, welke dient als uitgiftecomputer 2 voor toegangscodes waarmee toegang kan worden verkregen tot een of meer evenementen. Indien een consument een van
25    deze evenementen wil bezoeken, kan hij via zijn thuiscomputer 3 middels een modem contact maken met het internet 1, en het internetadres (URL) van de betreffende server invoeren in zijn webbladerprogramma (browser). Op zijn beeldscherm verschijnt dan een
30    webpagina, waarop de verschillende evenementen worden aangeboden.

De consument kan zijn keuze kenbaar maken, waarbij hij tevens voorkeuren zoals aantal personen, datum, tijd,
35    rang, enzovoort aangeeft. Vervolgens wordt de totaalprijs van de transactie getoond en de consument kan deze vervolgens voldoen, bijvoorbeeld middels een

credit card of een waardepuntensysteem, waarbij een
beveiligde verzendprocedure wordt gebruikt.

Nadat dit is gedaan, wordt de transactie voltooid door
5    het verzenden van een toegangscode door de
uitgiftecomputer 2 aan de thuiscomputer 3 van de
consument, welke toegangscode, die in dit
uitvoeringsvoorbeeld de vorm van een streepjescode heeft
die een alfanumerieke reeks van twintig karakters
10   representeert, op het scherm wordt weergegeven. Het
verzenden van de toegangscode gebeurt eveneens op een
beveiligde wijze. Als optie wordt, indien de consument
een emailadres opgeeft, de toegangscode eveneens per
beveiligde email verzonden, zodat de toegangscode voor
15   hem niet verloren gaat indien de webpagina met de
toegangscode onverhoopt voortijdig van het beeldscherm
verdwijnt.

Vervolgens kan de consument de toegangscode, in de vorm
20   van een streepjescode, afdrukken op zijn eigen printer
4, waarbij eveneens aanvullende informatie kan worden
afgedrukt, zoals datum, begin- en eindtijd van de
periode waarin men zich moet melden, een eventueel
toegangspoortnummer waar men zich moet melden, alsmede
25   een eventueel stoelnummer, waardoor als het ware een
toegangskaartje met een unieke toegangscode ontstaat.
Indien meerdere toegangscodes tegelijkertijd zijn
aangeschaft voor verschillende evenementen, of voor
meerdere personen, kunnen deze op overeenkomstige wijze
30   worden afgedrukt.

Met verwijzing naar de figuren 2, 3 en 4 wordt de
gebruikte procedure voor het verstrekken van
toegangscodes toegelicht. Een toegangscode in dit
35   uitvoeringsvoorbeeld bestaat, zoals eerder beschreven,
uit 20 alfanumerieke karakters. Verzamelingen 10, 20
representeren alle mogelijke codes die uit 20

8
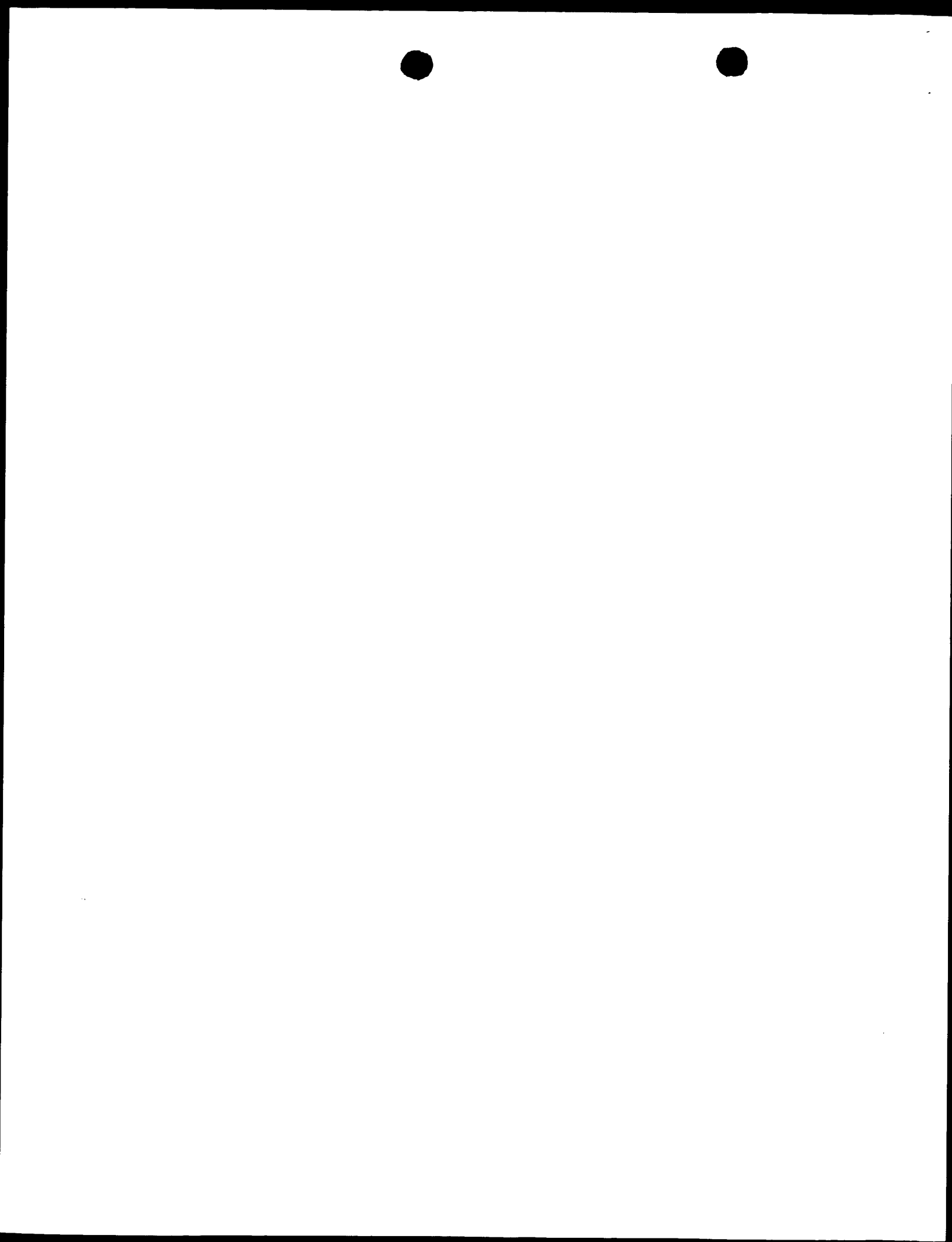
alfanumerieke karakters bestaan, het zogenaamde formaat
waaraan een code moet voldoen. Deelverzamelingen 11, 21
representeren de verzameling toegangscodes die verstrekt
kunnen worden voor een bepaald evenement, en bepaalt dus
5   tevens het maximum aantal consumenten dat het evenement
kan bezoeken.

Bij de bekende, in de inleiding beschreven wijze van het
verstrekken van toegangscodes via het internet, vormen
10  de toegangscodes een continue, niet willekeurige
deelverzameling 11 van een totaalverzameling 10,
bijvoorbeeld doordat bij elke volgende te verstrekken
code deze met één wordt opgehoogd. In elk geval is
daarbij, indien men eenmaal een of enkele toegangscodes
15  weet, eenvoudig een volgende toegangscode te
voorspellen. Derhalve dient men bij een dergelijke
werkwijze bij de toegang te controleren of de
betreffende toegangscode ook daadwerkelijk is verstrekt,
en tevens door middel van een identificatiebewijs of de
20  juiste persoon zich met deze toegangscode meldt, om te
voorkomen dat een vervalser met een toegangscode die is
verstrekt aan iemand anders toegang krijgt. Het is
derhalve noodzakelijk dat een actuele lijst met
daadwerkelijk verstrekte toegangscodes en de
25  bijbehorende namen van consumenten bij de toegang tot
het evenement beschikbaar is.

Bovenstaande omslachtige extra beveiliging kan voorkomen
worden, zoals schematisch in figuur 3 is weergegeven,
30  door ervoor te zorgen dat een toegangscode niet met
behulp van een of meer andere toegangscodes is te
voorspellen, met andere woorden dat de toegangscodes
willekeurig of semi-willekeurig bepaald worden, en er
daarbij tevens voor te zorgen, dat de deelverzameling
35  toegangscodes 21 ten opzichte van de totaalverzameling
20 zodanig klein is, dat de kans dat een willekeurig
gekozen code een toegangscode is, zeer klein is. Bij een

formaat van 20 alfanumerieke karakters (36 mogelijke
tekens per positie, A..Z,0..9) bestaat de
totaalverzameling 10, 20 uit 1,34 x $10^{31}$ codes, wat aan
een potentiële vervalser bij een maximum aantal

5   bezoekers van 100.000 een kans op een toevallig juiste
toegangscode van slechts 1 : 1,34 x $10^{26}$ per poging
geeft.


Met verwijzing naar figuur 4 wordt een bepaalde
10  procedure gebruikt om een pseudo-willekeurige
deelverzameling toegangscodes 21 te bepalen. Er wordt
uitgegaan van een deelverzameling "uitkomsten" 31. De
term uitkomsten zal later nader worden verklaard. Deze
uitkomsten 31 zijn in het uitvoeringsvoorbeeld
15  samengesteld uit een toegangspoortnummer, een
toegangsdatum, een toegangstijdsegment, een volgnummer
en vier filtercodes. In totaal omvat deze uitkomst 15
karakters. De uitkomsten 31 vormen een niet willekeurige
deelverzameling 31 van een totaalverzameling 30. Bij het
20  verstrekken van de toegangscodes zoals beschreven aan de
hand van figuur 1, wordt een eerste uitkomst opgehaald
uit het geheugen van uitgiftecomputer 2, waarbij deze
tegelijk wordt geblokkeerd voor een volgende
verstrekking.

25

Vervolgens wordt de uitkomst door middel van een
logische bewerking, welke bestaat uit verschillende
stappen volgens een bepaald voorschrift dat afhankelijk
is van de toegangspoort/toegangsdatum/
30  toegangstijdsegment-combinatie, omgezet in een pseudo-
willekeurige toegangscode, zoals wordt weergeven door de
pijlen in figuur 4. Het bewerkingsvoorschrift kan een
bekende techniek uit de cryptologie zijn.


35  Het bewerkingsvoorschrift schrijft volgens het
uitvoeringsvoorbeeld achtereenvolgens voor het van
plaats wisselen van de karakters (bijvoorbeeld het

eerste karakter naar de derde plaats, het tweede
karakter naar de elfde plaats, het derde karakter naar
de tweede plaats, enzovoort) en het substitueren van
karakters (bijvoorbeeld A door Y, B door Z, C door 1, D
5  door 2, enz.). Daarbij worden de eerste twee
filtercodes gebruikt om te bepalen welke wisselstap en
welke substitutiestap moeten worden toegepast.
Vervolgens wordt uit de dan ontstane code een
alfanumeriek controlegetal bepaald bestaande uit vijf
10  karakters, waarmee vervolgens de oorspronkelijke
uitkomst wordt uitgebreid tot in totaal twintig
karakters. Hierna worden weer een wisselstap en een
substitutiestap uitgevoerd, welke worden bepaald door de
derde en vierde filtercodes. Doordat er vier filtercodes
15  zijn, zijn er $36^4$ (ruim 1,6 miljoen) verschillende
bewerkingsvoorschriften mogelijk, wat een goede
beveiliging tegen kraken van het systeem geeft.

Hierdoor ontstaat een pseudo-willekeurige toegangscode,
20  welke via het internet aan de thuiscomputer van de
consument wordt gezonden en welke door hem kan worden
afgedrukt.

Pseudo-willekeurig betekent dat de deelverzameling
25  toegangscodes 21, die ontstaat door toepassing van de
logische bewerking op alle elementen van de
deelverzameling 31, hoewel herleid uit een niet
willekeurige verzameling, statistisch gezien niet of
nauwelijks is te onderscheiden van een werkelijk
30  willekeurige deelverzameling.

De consument meldt zich vervolgens in het aangegeven
tijdsegment met zijn afgedrukte code bij de aangegeven
toegangspoort. In figuur 5 is een
35  toegangscontrolesysteem weergegeven, welke bestaat uit
een toegangscomputer 40, die is verbonden met een aantal
toegangspoorten 41. In het geheugen van de

toegangscomputer 40 is voor elke mogelijke
poortnummer/toegangsdatum/toegangstijdsegment-combinatie
het bijbehorend bewerkingsvoorschrift opgeslagen. Het is
derhalve niet noodzakelijk dat de toegangscodes zelf in
5   het geheugen, noch de werkelijk verstrekte toegangscodes
dan wel de oorspronkelijke volgnummers die daaraan ten
grondslag lagen, zijn opgeslagen.

Het bewerkingsvoorschrift dat gebruikt wordt is de
10  inverse van het bewerkingsvoorschrift dat door de
uitgiftecomputer is toegepast bij het verstrekken van
toegangscodes voor deze toegangspoort/toegangsdatum/
toegangstijdsegment-combinatie.

15  De consument houdt zijn code, welke in de vorm van een
streepjescode is afgedrukt, bij een optische scanner 42,
waardoor de code wordt ingelezen in het geheugen van
toegangscomputer 40. Vervolgens wordt op de ingelezen
code het bewerkingsvoorschrift toegepast, dat op dat
20  tijdstip van kracht is voor de betreffende
toegangspoort. Omdat dit bewerkingsvoorschrift de
inverse is van het bewerkingsvoorschrift waarmee de
oorspronkelijke uitkomst door de uitgiftecomputer werd
omgezet in een toegangscode, volgt dat door de
25  toegangscomputer de aangeboden code wordt omgezet in een
"uitkomst", bestaande uit onder andere een
toegangspoortnummer, een toegangsdatum en een
toegangstijdsegment.

30  Indien deze drie gegevens overeenkomen met de op dat
moment geldende feiten, wordt geconstateerd dat de
aangeboden code een toegangscode is, en wordt aan de
consument toegang verleend. Naar keuze kan bijvoorbeeld
de controle op het poortnummer worden uitgeschakeld,
35  indien een toegangspoort bijvoorbeeld defect is en men
van een andere toegangspoort dan oorspronkelijk bedoeld,
gebruik moet maken.
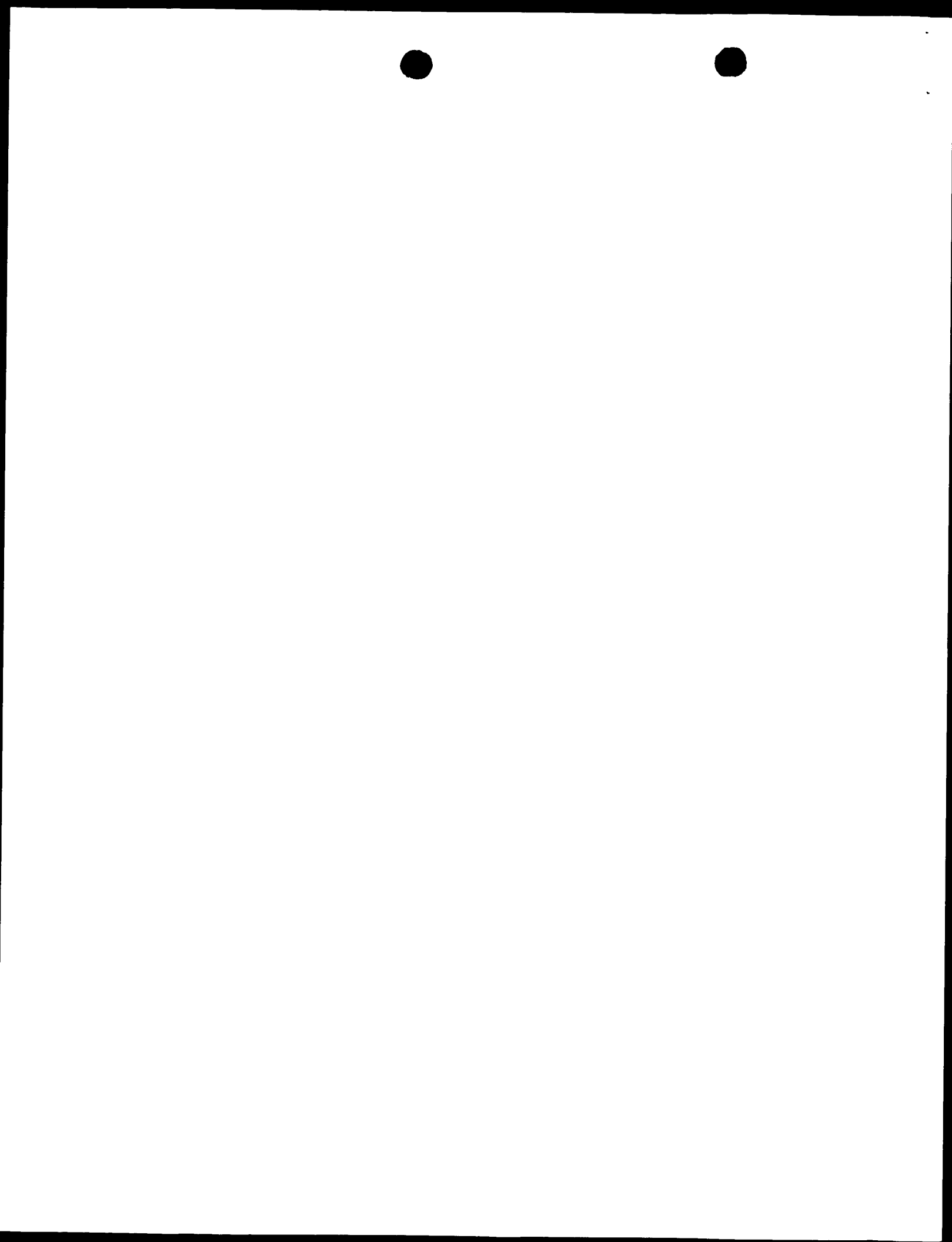
Het volgnummer, dat eveneens in de uitkomst voorkomt, wordt na de controle opgeslagen in het geheugen van de toegangscomputer, zodat gecontroleerd kan worden of aan een toegangscode al eerder toegang is verschaft.

5  Hierdoor kan worden voorkomen dat twee mensen met een van elkaar gekopieerde toegangscode beiden toegang krijgen. Door de mededeling van deze beveiliging mee te zenden en af te laten drukken bij het verstrekken van de toegangscode, wordt het kopiëren van toegangscodes

10  ontmoedigd, en wordt de consument er voor gewaarschuwd dat hij de code niet aan vreemden moet tonen, opdat deze niet gekopieerd kan worden.

Nadat geconstateerd is dat een aangeboden code een

15  toegangscode is en niet reeds toegang was verschaft, wordt een met de toegangscomputer 40 verbonden barrière 43, bijvoorbeeld een wentelpoortje, ontgrendeld, zodat de consument toegang wordt verschaft tot het evenement.

CONCLUSIES

1.  Werkwijze voor het verschaffen van toegang tot een
    evenement, waarbij via een distributiekanaal een
5   toegangscode wordt verstrekt aan een consument,
    welke toegangscode voldoet aan een vooraf bepaald
    formaat en welke toegangscode element is van een
    verzameling toegangscodes, welke verzameling
    toegangscodes een vooraf bepaalde willekeurige of
10  pseudo-willekeurige deelverzameling vormt van alle
    codes die voldoen aan het vooraf bepaalde formaat,
    en waarbij bij de toegang tot het evenement wordt
    gecontroleerd of een door een consument aangeboden
    code behoort tot de verzameling toegangscodes.

15
2.  Werkwijze volgens conclusie 1, waarbij na ontvangst
    door de consument de code wordt aangebracht op een
    drager.

20  3.  Werkwijze volgens conclusie 2, waarbij de code door
    middel van een printer op de drager wordt
    aangebracht.

4.  Werkwijze volgens conclusie 1, 2 of 3, waarbij de
25  code een streepjescode omvat.

5.  Werkwijze volgens een van de voorgaande conclusies,
    waarbij het distributiekanaal het internet omvat.

30  6.  Werkwijze volgens een van de voorgaande conclusies,
    waarbij het evenement behoort tot de verzameling
    bestaande uit een sportevenement, een concert, een
    dag in een attractiepark, een bioscoopvoorstelling,
    een theatervoorstelling, een beurs, een symposium,
35  een bootreis, een treinreis, een busreis en een
    vliegreis.

7.   Werkwijze volgens een van de voorgaande conclusies,
     waarbij afhankelijk van het resultaat van de
     controle een toegangspoort wordt ontgrendeld of
     geblokkeerd.

8.   Werkwijze volgens een van de voorgaande conclusies,
     waarbij bij de toegang tot het evenement de
     aangeboden code door middel van een invoerapparaat
     wordt ingevoerd in een toegangscomputer.

9.   Werkwijze volgens conclusie 8, waarbij het
     invoerapparaat een optische scanner is.

10.  Werkwijze volgens een van de voorgaande conclusies,
     waarbij de controle bij de toegang wordt uitgevoerd
     door de toegangscomputer welke een logische
     bewerking toepast op de aangeboden code, waarvan de
     uitkomst wordt vergeleken met een vooraf bepaalde
     verzameling uitkomsten welke is opgeslagen in het
     geheugen van de toegangscomputer.

11.  Werkwijze volgens conclusie 10, waarbij de uitkomst
     een identificatie van een toegangspoort en/of een
     toegangsdatum en/of een toegangstijdsegment en/of
     een stoelnummer en/of een volgnummer omvat.

12.  Werkwijze volgens conclusie 10 of 11, waarbij de
     toegangscomputer de vergelijking van de uitkomst
     met de verzameling vooraf bepaalde uitkomsten naar
     keuze kan uitvoeren op een gedeelte van de
     uitkomst.

13.  Werkwijze volgens conclusie 10, 11 of 12, waarbij
     het voorschrift voor de logische bewerking
     periodiek wordt veranderd.

14.  Werkwijze volgens een van de conclusies 10 - 13,

waarbij de toegangscode bij het verstrekken door
een uitgiftecomputer wordt bepaald door een
uitkomst op te halen uit de vooraf bepaalde
verzameling uitkomsten en op de uitkomst de inverse
5    toe te passen van de logische bewerking die op het
moment van toegang zal worden toegepast.

15.    Werkwijze volgens conclusie 14, waarbij de
uitgiftecomputer een uitkomst slechts eenmaal
10   bewerkt tot toegangscode.

16.    Werkwijze volgens een van de voorgaande conclusies,
waarbij ten minste een kenmerkend deel van de
aangeboden toegangscode en/of de bijbehorende
15   uitkomst wordt opgeslagen in een geheugen van de
toegangscomputer en deze toegangscode daarna wordt
uitgesloten van toegang.

17.    Toegangscontrolesysteem bestemd voor het uitvoeren
20   van de werkwijze volgens een van de voorgaande
conclusies, omvattende een toegangscomputer welke
is voorzien van middelen om te controleren of een
ingevoerde code behoort tot een verzameling
toegangscodes, welke verzameling toegangscodes een
25   vooraf bepaalde willekeurige of pseudo-willekeurige
deelverzameling vormt van alle codes die voldoen
aan een vooraf bepaald formaat.

18.    Toegangscontrolesysteem volgens conclusie 17,
30   waarbij de toegangscomputer is voorzien van
middelen die een logische bewerking toe kunnen
passen op de ingevoerde code, en de uitkomst
daarvan kunnen vergelijken met een vooraf bepaalde
verzameling uitkomsten welke is opgeslagen in het
35   geheugen van de toegangscomputer.

19.    Toegangscontrolesysteem volgens conclusie 17 of 18,

voorts omvattende ten minste een toegangspoort
welke afhankelijk van het resultaat van de controle
kan worden ontgrendeld of geblokkeerd.

5   20.   Uitgiftecomputer bestemd voor het uitvoeren van de
         werkwijze volgens een van de conclusies 1 - 16,
         voorzien van middelen die er op toezien dat de
         toegangscode voldoet aan een vooraf bepaald formaat
         en een element is van een verzameling
10       toegangscodes, welke verzameling toegangscodes een
         vooraf bepaalde willekeurige of pseudo-willekeurige
         deelverzameling vormt van alle codes die voldoen
         aan het vooraf bepaalde formaat.

15   21.   Uitgiftecomputer volgens conclusie 20, voorts
         voorzien van middelen die de toegangscode kunnen
         bepalen door een uitkomst op te halen uit een
         vooraf bepaalde verzameling uitkomsten en op de
         uitkomst de inverse toe te passen van een logische
20       bewerking die op het moment van toegang door een
         toegangscontrolesysteem volgens conclusie 18 of 19
         kan worden toegepast.

     22.   Drager waarop een toegangscode is aangebracht
25       volgens de werkwijze van een van de conclusies 1 -
         16.
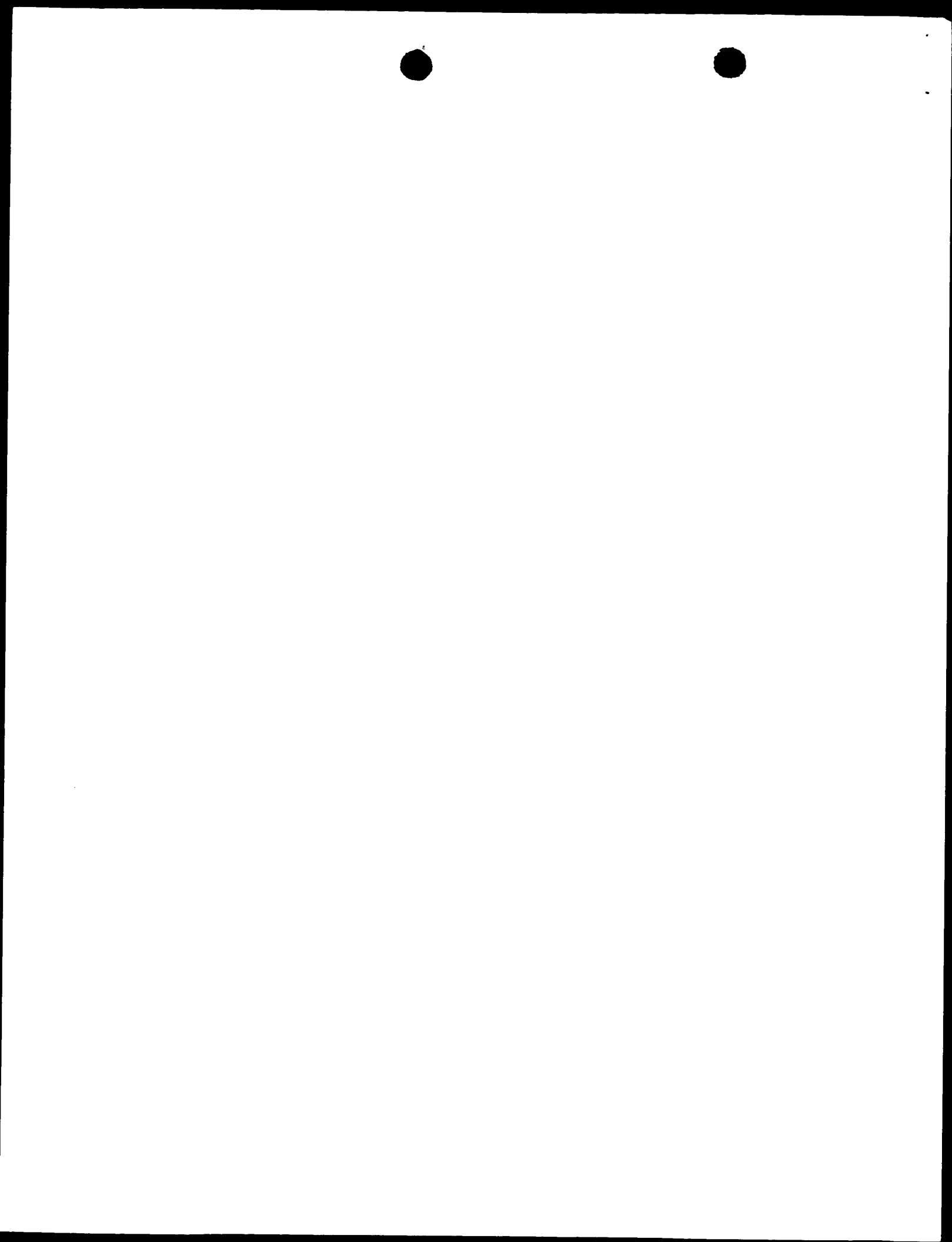
UITTREKSEL

Werkwijze voor het verschaffen van toegang tot een evenement, waarbij via een distributiekanaal een
5   toegangscode wordt verstrekt aan een consument, welke toegangscode voldoet aan een vooraf bepaald formaat en welke toegangscode element is van een verzameling toegangscodes, welke verzameling toegangscodes een vooraf bepaalde willekeurige of pseudo-willekeurige
10  deelverzameling vormt van alle codes die voldoen aan het vooraf bepaalde formaat, en waarbij bij de toegang tot het evenement wordt gecontroleerd of een door een consument aangeboden code behoort tot de verzameling toegangscodes.

(54) Title: TELEPHONE SYSTEM FOR REMOTELY PURCHASING TICKETS AND ORDERING PRODUCTS

(57) Abstract

A telephone system having at least one remotely located telephone terminal (30) for purchasing and printing lottery tickets as well as tickets to sporting events, airline flights, and concerts, and for buying products from a store and printing receipts therefor and printing coupons. The telephone system includes a central computer linked by telephone lines to the remotely located telephone terminals. The central computer (10) and each remotely located telephone terminal (30) can be located any place where telephone service is available; however, the remotely located telephone terminals are preferably placed in the homes or offices of subscribers to the telephone system. Each telephone terminal comprises a telephone with a TOUCH-TONE keypad (32), a data modem (34), a printer for printing ticket indicia (36), and a display (38). The display and printer are connected and responsive to the data modem. The central computer (10) comprises an interface device (40), an answering machine (50), a tone sensor (60), a main processor (70), and an instruction announcer (80). The interface device is connected to the telephone lines and is capable of establishing a communications link with the data modem of each telephone terminal. Preferably, the central computer (10) further includes a device for communicating with a financial institution (115), a ticket distributer (135), a lottery ticket distributer (185), a store (195), and optical scanners (170). In addition, the central computer preferably includes a bar-code generating device which causes a bar-code to be printed on each ticket for verification purposes, and optical scanners (170) for reading the bar-code at a location where the tickets are tendered.
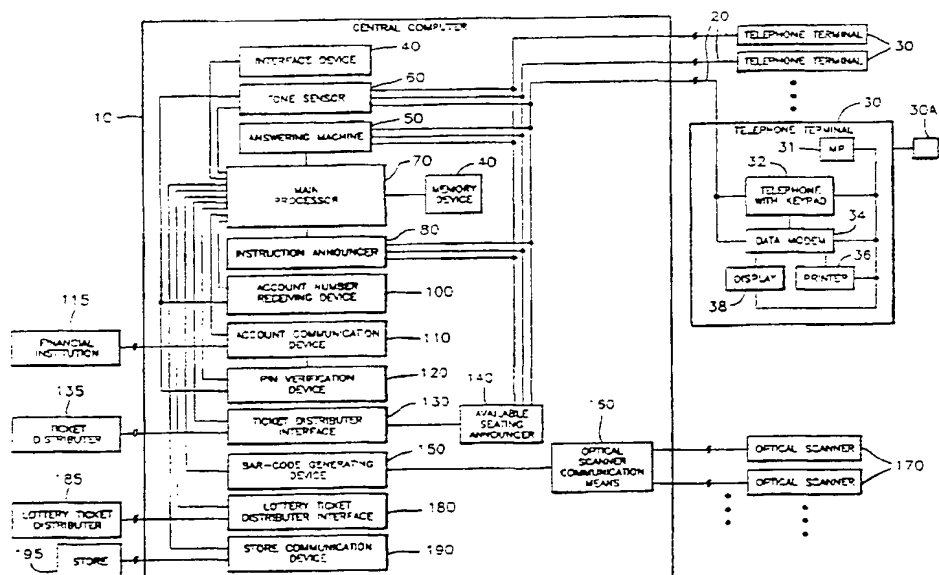
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# TELEPHONE SYSTEM FOR REMOTELY
## PURCHASING TICKETS AND ORDERING PRODUCTS

### Technical Field

The present invention relates to a telephone system

5 having at least one remotely located telephone terminal for purchasing and printing lottery tickets and tickets to sporting events, airline flights, concerts, etc. and for buying products from a store and printing receipts therefor.

As society moves deeper into the electronic age, it

10 becomes evident that the traditional methods used to purchase products and services is wasteful, time consuming, and inefficient. If one wishes, for example, to purchase a lottery ticket, one must go to a lottery ticket outlet such as a liquor store, or convenience store. In doing so, much time is wasted, as well as energy if one travels by car.

15 The same is true in the case of airline tickets, tickets to sporting events, and concert tickets unless one wants to wait for the tickets to arrive by mail.

U.S. Patents Nos. 3,688,276 to Quinn; 4,677,553 to Roberts et al.; 4,815,741 to Small; 5,083,272 to Walker et al.;

20 4,937,853 to Brule et al.; 4,908,770 to Breault et al.; and 4,922,522 to Scanlon are examples of conventional ticket vending devices.

The '276 patent to Quinn discloses a central computer which controls remote vending machines through long distance communication lines wherein the vending machines, in response to

25 instructions from the computer, print and issue documents such as entertainment tickets, lottery tickets, race tickets and the like. According to this device, however, money must be give to the vending machine, or alternatively, an attendant must be present during a ticket purchase transaction. Furthermore, there is little security against ticket

30 forgery, since the ticket printing device of Quinn prints directly onto valuable ticket stock material. The Quinn device also requires an expensive split platen printer mechanism capable of printing thick ticket stock on one platen and inquiry information on the other platen.

The '553 patent to Roberts et al. discloses a device for associating a
bar-code with an instant lottery ticket. Here, however, confidential
information is securely placed on tickets distributed in blank by a

5      complex process of opaquely overlaying an area of the ticket upon
which the information is to be placed in visible form and employing a
printing apparatus that prints the visible information on the ticket area
through the opaque overlay without leaving any easily-discernible trace
in the overlay that reveals the imprinted information.

10     The '741 patent to Small discloses an apparatus and
method for automated marketing and gaming wherein a player inserts
an identification card into an automated remote interface device and
accesses an account at a subject financial institution. The user
identifier provides access to the financial account, and a user indicia is

15     compared to a game indicia to determine whether a selected winning
correlation is present between the game indicia and the user indicia.
Although the primary purpose of the device is to promote use of an
automatic teller machine or point of sale machine, the patent does
mention use of the device to sell lottery chances. In particular,

20     chances are purchased using funds from a financial account, while
records of the purchase are maintained by the apparatus. This patent,
however, fails to teach use of a printing device to remotely print
different lottery or other kinds of tickets.

The '272 patent to Walker et al. discloses an interactive

25     transaction system wherein a user interacts with the system by means
of a telephone which delivers output signals from the user and receives
input signals from the system. The telephone is interfaced to a
communication network through a switching unit. An account is
provided from which the amount of the transaction is debited. A

30     transaction microprocessor is interfaced to receive the input signals
from the telephone which identify the transaction, the amount of the
transaction and the user's personal identification code. The transaction

microprocessor then communicates with the account microprocessor to authorize and complete the transaction. Although the patent mentions using the disclosed system for purchasing lottery chances, there is no means for printing tickets resulting from such purchases. Moreover,

5 the patented device fails to provide a device for purchasing and printing other types of tickets, as well.

The '853 patent to Brule et al. discloses a bar-coding system for validating instant lottery tickets. The instant lottery tickets, however, are not remotely generated with the bar-codes at the time of

10 purchase, but are instead purchased in the conventional manner with the bar-code already printed thereon.

The '770 patent to Breault et al. discloses a mail management system comprising a host system coupled to one or more operator workstations, which system can be used to print tickets. This

15 system, however, suggests nothing more than its use with a conventional ticket dispensing machine such as those found in stores or tickets distribution centers.

The '522 patent to Scanlon discloses a system for providing telecommunications access to a lottery system. Although

20 . the system does provide the ability to purchase lottery tickets via telecommunications, there are no means provided for printing a forgery-proof lottery ticket at a remote location.

## Disclosure of the Invention

It is therefore a primary object of the present invention to

25 overcome the aforementioned problems and disadvantages, by providing a telephone system for purchasing tickets, and for printing the tickets thus purchased immediately at a telephone terminal in the home.

Another object of the present invention is to provide a

30 telephone system for ordering products from one's home and for printing a receipt immediately at the home using a telephone terminal device.

In order to achieve these and other objects, the telephone system of the present invention comprises a central computer linked by telephone lines to at least one remotely located telephone terminal. The central computer and each remotely located telephone terminal can

5   be located any place where telephone service is available; however, the remotely located telephone terminals are preferably placed in the homes or offices of subscribers to the telephone system. By arranging the telephone system in this manner, subscribers are able to access the telephone system conveniently from their home or office.

10  Each telephone terminal comprises a microprocessor, a telephone with a TOUCH-TONE keypad, a data modem, a printer for printing ticket indicia, and a display. The display and printer are connected and responsive to the data modem and the microprocessor.

The central computer comprises an interface device; an

15  answering machine, a tone sensor, a main processor, and an instruction announcer. The interface device is connected to the telephone lines and is capable of establishing a communications link with the data modem of each telephone terminal. Preferably, all components in the central computer are redundant so that if a failure

20  · occurs, the central computer can automatically sense the failure, and automatically reconfigure the telephone system to eliminate the faulty component.

The answering machine of the central computer is also connected to the telephone lines and is responsive to incoming

25  telephone calls, so that the incoming telephone calls are answered with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal correspond to ticket and product purchase transactions the subscriber can make with the central computer.

30  The tone sensor, which is also connected to the telephone lines and is responsive to tones generated by the telephone terminal, detects which keys are pressed on the keypad of the telephone

terminal in response to the explanation given by the answering machine. The tone sensor then outputs a signal to the main processor indicative of which keys were pressed.

The main processor of the central computer is connected and responsive to the tone sensor and is thus able to respond to keys pressed on the keypad of the telephone terminal. Based on the keys pressed and a predetermined protocol, the main processor processes a ticket purchase transaction and outputs ticket purchase data to the printer and the display via the interface device, the telephone lines, and the data modem. In the event that a product is ordered rather than a ticket, the main processor processes the product purchase transaction and outputs product purchase data to the printer. The printer then prints a receipt of the transaction.

The instruction announcer of the central computer is connected to the main processor. In particular, the main processor controls the instruction announcer such that one of a plurality of pre-determined instructions is played. The particular instruction which is played corresponds to one step in a ticket or product purchase transaction. This instruction is announced to the subscriber via the telephone of the telephone terminal.

Preferably, the central computer further comprises a memory device for storing data related to each ticket or product purchase transaction occurring between the subscriber and the central computer. This information can be used for, among other things, billing purposes.

In addition, the central computer preferably comprises an account number receiving device connected to the tone sensor, for receiving at least one financial account number from the subscriber through the telephone terminal, and an account communications device for communicating automatically with a computer system of at least one financial institution. This arrangement allows financial account information pertaining to a financial account of the subscriber to be

accessed by the central computer. Preferably, the account communications device is capable of crediting or debiting the subscriber's financial account in accordance with ticket or product purchase transactions so that the mailing of a payment can be avoided.

5        For security reasons, the central computer can further comprise a PIN verification device connected and responsive to the tone sensor and also connected and responsive to the account communications device. In particular, the PIN verification device receives a personal identification number from the subscriber via the

10      telephone terminal, and verifies the personal identification number based on financial account information. The PIN verification device is further connected to the main processor so that the main processor can deny or grant ticket and product purchase transactions based on verification of the personal identification number.

15      For added security, the main processor can be programmed to receive an authorization number from the subscriber through the telephone terminal, to verify the authorization number, and to grant or deny ticket and product purchase transactions based on whether the authorization number is valid. The authorization number in

20      this case need not relate to a financial account.

Similarly, the microprocessor of the telephone terminal can be programmed such that, upon communicating with the central computer, the microprocessor performs an internal diagnostic check and transmits its model number, a revision number (corresponding to

25      its most recent programming), and an indication of the outcome of the diagnostic check to the central computer.

In the event that the operator of the telephone system is not the initial seller of tickets, the computer system further comprises a ticket distributor interface for communicating automatically with a

30      computer system of at least one ticket distributor. Using the ticket distributer interface, the central computer is given access to information pertaining to scheduling and available seating for airline

flights, sporting events, and concerts. In addition, the central computer further comprises an available seating announcer connected and responsive to the ticket distributer interface, for automatically announcing via the telephone terminal the information pertaining to

5    scheduling and available seating. This information can likewise be displayed on the display of the telephone terminal.

In order to prevent mistakes in a ticket order, the main processor can be made responsive to confirmation information keyed in by the subscriber using the telephone terminal. In particular, the

10   confirmation information would be indicative of whether the subscriber wishes to purchase tickets for the event and seat being currently announced by the available seating announcer.

Once a ticket order is placed and confirmed, the main processor and microprocessor cause the printer to generate a ticket

15   having indicia indicative of the artist performing, seat number, place of performance, and date and time of performance in the case of a concert; the teams playing, date and time of the event, and the stadium in the case of a sporting event; and the airline, the date, time and place of departure, and the destination in the case of a flight.

20   In order to prevent the use of fraudulent tickets, the central computer can further comprise a bar-code generating device and a means for communicating with at least one optical scanner. Each optical scanner is positioned at a location where tickets from the telephone system are tendered. In operation, the bar-code generating

25   device generates a bar-code which is printed on each ticket purchased using the telephone system and which is readable by each optical scanner. The means for communicating with the optical scanner then provides the optical scanner with information indicative of which bar-codes are valid so that the optical scanner can distinguish authentic

30   bar-codes from fraudulent ones. Using this arrangement, fraudulent tickets can be detected at the point where they are tendered.

If the operator of the telephone system is not an initial

seller of lottery tickets, the central computer of the present invention can further comprise a lottery ticket distributer interface for communicating automatically with a computer system of at least one lottery ticket distributer so that lottery tickets can be purchased using

5     the telephone system. According to such an embodiment, the information keyed in by the subscriber includes desired lottery numbers, types of lottery tickets, and number of tickets. This information is then received by the main processor via the tone sensor. In response, the main processor causes the information to be displayed

10    on the display of the telephone terminal prior to completing the ticket purchase transaction. Preferably, the ticket purchase transaction cannot be completed by the main processor until the subscriber enters a confirmation via the keypad of the telephone terminal.

In the event that the operator of the telephone system is not the

15    initial seller of products which can be ordered via the telephone system, the central computer further comprises a store communication device for communicating with the automated product ordering computer of a store. In particular, the main processor is programmed to receive via the keypad of the telephone terminal a product number

20    corresponding to a particular product sold by the store. This product number can be obtained, for example, from a catalogue or advertisement which is provided to each subscriber. The display of the telephone terminal is preferably responsible to the main processor and microprocessor so as to display the product number for confirmation

25    purposes. In this regard, the main processor can be programmed to complete a purchase transaction of the product only after having received a keyed-in confirmation from the subscriber. After the purchase transaction is complete, the printer of the telephone terminal can be used to print a receipt which, in turn, documents the order.

30    The printer can also print a coupon to encourage further shopping.

According to a preferred embodiment of the present invention, the printer prints ticket indicia onto an adhesive-backed

material which can be subsequently attached to ticket stock material. Alternatively, since adhesive labels are typically more expensive than plain paper, and since the printer can be used to print both tickets and receipts, the printer can print the ticket indicia onto plain paper which

5 is subsequently attached to adhesive ticket stock material.

It is understood that, until the particular stadium or other attraction, becomes equipped to handle tickets printed by the present invention, the printed tickets can be used as vouchers to redeem actual tickets at a "will call" window.

10 The above and other objects and advantages will become more readily apparent when reference is made to the following description taken in conjunction with the accompanying drawings.

## Brief Description of the Drawings

Figure 1 is a block diagram illustrating a preferred

15 embodiment of the telephone system of the present invention.

Figure 2 is a block diagram illustrating a preferred embodiment of a central computer in accordance with the present invention.

Figure 2A is a block diagram illustrating a preferred

20 embodiment of a telephone terminal according to the present invention.

Figure 3 is a top view of a telephone terminal with a liquid crystal display.

Figure 4 is a top view of a telephone terminal with a liquid crystal display screen collapsed flat against the top of the telephone

25 terminal.

Figure 5 is an elevation view of the telephone terminal of Figure 4 with the liquid crystal display screen arranged substantially perpendicular to the top of the telephone terminal.

Figure 6 is an elevation of a cable television interactive

30 converter box in accordance with the present invention.

### Detailed Description of the Invention
### And Best Mode for Carrying Out the Invention

With reference to Figure 1, a preferred embodiment of the telephone system of the present invention will now be described.

5      According to the preferred embodiment, the telephone system 2 comprises a central computer 10 linked by telephone lines 20 to at least one remotely located telephone terminal 30.  The central computer 10 and each remotely located telephone terminal 30 can be located any place where telephone service is available;  however, the

10     remotely located telephone terminals 30 are preferably placed in the homes or offices of subscribers to the telephone system. By arranging the telephone system 2 in this manner, each subscriber is able to access the telephone system 2 conveniently from their home or office.

Each telephone terminal 30 comprises a PROM-based

15     microprocessor 31, a telephone 32 with a TOUCH-TONE keypad, a data modem 34, a printer 36 for printing ticket indicia, and preferably a display 38.  The telephone 32, data modem 34, and printer 36 and display 38 are all responsive to the microprocessor 31.  Preferably, the PROM-based microprocessor 31 is electronically re-writable so that

20     program software, account information and service provider phone numbers can be updated by a download sequence from the central computer 10.  The display 38 and printer 36 are connected and responsive to the data modem 34 and the microprocessor 31.

Preferably, the display 38 is a liquid crystal display,

25     however, as is mentioned hereinafter, the display can include other types of visual indicating devices.  It is understood that a display 38 is not necessary and that in this regard, information can be received audibly through the telephone.  The display 38 merely provides an easier overall arrangement which is less prone to human error.

30     The printer 36 preferably requires no outside maintenance, yet a very high level of print quality is achieved.  To this end the printer 36 can comprise a thermal type printer where only new paper must be

periodically added, or a cartridge impact printer where paper, ribbon and a platen are changed at the same time thereby simplifying the maintenance procedures and insuring against poor print quality which might otherwise result from worn ribbons. In either case, the paper

5    used by the printer has little value, per se, and only becomes valuable after being printed. The installation of new paper therefore does not require an employee of the service provider.

          Regardless of which printer 36 is used, a warning light can be provided or message can be made to appear when the paper or

10   cartridge needs to be replaced. In this regard, there can be two "Paper Out" levels, a first where a warning is provided at the telephone terminal device, and a second where the central computer is prevented from completing a transaction which would cause a ticket or receipt to be printed in the absence of paper.

15          The telephone terminal 30 receives electrical power from a modular power source 30A plugged into a conventional wall outlet. Different power modules can be supplied for various countries where the product will be used.

          The central computer comprises an interface device 40;

20   an answering machine 50, a tone sensor 60, a main processor 70, and an instruction announcer 80. The interface device 40 is connected to the telephone lines 20 and is capable of establishing a communications link with the data modem 34 of each telephone terminal 30. In particular, the interface device 40 can be realized using several

25   commercially available communication devices. Rockwell, Figitsu, Motorola, and Dallas Semiconductor, by way of example, all manufacture modem chips which can work in conjunction with a complete telephone IC such as the Motorola MC34010/11A and accompanying microprocessor to achieve the interface device 40.

30   Alternatively, the Zilog Z89C67 dual processor chip can be implemented as shown in Figure 2 and 2A, wherein the modem function is provided by part of the dual processor chip.

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The answering machine 50 of the central computer 10 is also connected to the telephone lines 20 and is responsive to incoming telephone calls, so that the incoming telephone calls are answered with a pre-recorded message explaining to the subscriber which buttons on

5     the keypad of the telephone terminal 30 correspond to ticket purchase transactions the subscriber can make with the central computer 10. In particular, the answering machine 50 can be realized using several commercially available answering machine ICs including those which are part of a modem, an example being the Dallas Semiconductor

10     DS2244T telephone micro hybrid SIM. Alternatively, in the case of the Zilog Z89C67 dual processor chip illustrated in Figures 2 and 2A, control software contained in the Zilog Telephone Toolbox application software, performs the functions of the answering machine 50.

The tone sensor 60, which is also connected to the

15     telephone lines 20 and is responsive to tones generated by the telephone terminal 30, detects which keys are pressed on the keypad of the telephone terminal 30 in response to the explanation given by the answering machine 50. The tone sensor 60 then outputs a signal to the main processor 70 indicative of which keys were pressed.

20     The tone sensor 60 itself can comprise any commercially available tone (Dual Tone Multi-Frequency - DTMF) detection circuit, which for example, can be found in modem chips manufactured by Rockwell, EXAR, and Dallas Semiconductor. Where the Zilog Z89C67 dual processor chip is used, the dual processor itself includes circuitry

25     for detecting the tone being generated.

The main processor 70 of the central computer 10 is connected and responsive to the tone sensor 60 and is thus able to respond to keys pressed on the keypad of the telephone terminal 30. Based on the keys pressed and a predetermined protocol, the main

30     processor 70 processes a ticket purchase transaction and outputs ticket purchase data to the printer 36 and the display 38 via the interface device 40, the telephone lines 20, and the data modem 34.

In the event that a product is ordered rather than a ticket, the main processor 70 processes the product purchase transaction and outputs product purchase data to the printer 36. The printer 36 then prints a receipt of the transaction. The printer 36 can also provide a coupon to

5    thereby encourage further shopping.

According to the embodiment illustrated in Figures 2 and 2A, the main processor 70 comprises a combination of an integral Z8 microcontroller in the Zilog Z89C67 dual processor controller, and a service provider computer. The service provider computer in Figure 2

10   controls, inter alia, account verification, access of seating information for at least one Interactive Voice Response Service Module (IVR), and placing of orders. Although not illustrated in Figure 2, there can be more than one IVR service module, each of which acts as a peripheral device attached to the service provider computer.

15   The instruction announcer 80 of the central computer 10 is connected to the main processor 70. In particular, the main processor 70 controls the instruction announcer 80 such that one of a plurality of pre-determined instructions is played. The particular instruction which is played corresponds to one step in a ticket or

20   product purchase transaction. This instruction is announced to the subscriber via the telephone 32 of the telephone terminal 30. In addition, the instruction announcer 80 can be arranged such that the instructions are displayed on the display 38 of the telephone terminal 30.

25   The instruction announcer 80 preferably is a speech or voice processor which converts digitally stored data into analog signals that can be heard by a subscriber. Such speech or voice processors are known and can be made from commercially available components. For example, a Dallas Semiconductor SIM device such as the DS2249

30   Data Access Arrangement (DAA) device which interfaces with a phone line, can be combined with a DS2244T Telephone microprocessor, and with a DS2271 speech processor to provide a complete IVR service

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module having voice announcing capabilities.

In the exemplary embodiment of Figures 2 and 2A, the IVR service module inherently includes an instruction announcer and a memory which maintains voice menu instruction data. It should be

5    noted, however, that in certain menu sequences, additional voice menu data is transferred to the IVR service module from the service provider computer.

Preferably, the central computer 10 further comprises a memory device 90 for storing data related to each ticket or product

10   purchase transaction occurring between the subscriber and the central computer 10.

In addition, the central computer 10 preferably comprises an account number receiving device 100 connected to the tone sensor 60, for receiving at least one financial account number from the

15   subscriber through the telephone terminal 30, and an account communications device 110 for communicating automatically with a computer system of at least one financial institution 115. This arrangement allows financial account information pertaining to a financial account of the subscriber to be accessed by the central

20   computer 10. Preferably, the account communications device 110 is capable of crediting or debiting the subscriber's financial account in accordance with the ticket or product purchase transactions so that the mailing of a payment can be avoided.

According to the embodiment of Figures 2 and 2A, the

25   service provider computer system includes accounting software which allows the service provider computer to act as an account number receiving device 100 and an account communications device 110. According to this embodiment, the accounting software verifies a subscriber's PIN (as is described hereinafter) and, in the case of a store

30   purchase transaction, is responsible for transferring order information to stores , wherein the stores are responsible for charging the particular subscriber's credit card account. The service provider computer on a

periodic basis transfers orders along with customer data including credit card information, item information and shipping information. Detailed information is maintained within the service provider computer by the accounting software so that agreed-upon commissions can be

5    collected with the sale of products. At predetermined intervals, the service provider bills the various stores for these commissions.

In the case of lottery ticket purchases using the embodiment of Figures 2 and 2A, the accounting software can be used to communicate with a participating financial institution, wherein

10   money is deposited on account for the purpose of purchasing lottery or other gaming tickets. Whenever a ticket purchase transaction occurs, the subscriber's account is debited and funds are automatically transferred into the lottery system account, as well as the service provider account which receives a commission for the sale of the

15   tickets.

For security reasons, the central computer 10 can further comprise a PIN verification device 120 connected and responsive to the tone sensor 60 and also connected and responsive to the account communications device 110. In particular, the PIN verification device

20   120 receives a personal identification number from the subscriber via the telephone terminal 30, and verifies the personal identification number based on financial account information. The PIN verification device 120 is further connected to the main processor 70 so that the main processor 70 can deny or grant ticket purchase transactions

25   based on verification of the personal identification number.

In the Figures 2 and 2A embodiment, the accounting software allows the service provider computer to act as a PIN verification device. In particular, the IVR service module requests that the subscriber enter his/her PIN number via the keypad of the

30   telephone terminal. The IVR service module then detects the DTMF tones generated as a result of the subscriber's entry, and then passes the resulting data to the service provider computer. The service

provider computer then verifies whether the PIN is valid.

For added security, the main processor 70 can be programmed to receive an authorization number from the subscriber through the telephone terminal 30, to verify the authorization number,

5    and to grant or deny ticket purchase transactions based on whether the authorization number is valid. The authorization number in this case need not relate to a financial account.

Similarly, the microprocessor 31 of the telephone terminal 30 can be programmed such that, upon communicating with the

10   central computer, the microprocessor 31 performs an internal diagnostic check and transmits its model number, a revision number (corresponding to its most recent programming), and an indication of the outcome of the diagnostic check to the central computer 10.

In the event that the operator of the telephone system 2 is

15   not the initial seller of tickets, the computer system 10 further comprises a ticket distributer interface 130 for communicating automatically with a computer system of at least one ticket distributer 135. Using the ticket distributer interface 130, the central computer 10 is given access to information pertaining to scheduling and available

20   seating for airline flights, sporting events, and concerts. In addition, the central computer 10 comprises an available seating announcer 140 connected and responsive to the ticket distributer interface 130, for automatically announcing via the telephone terminal 30 the information pertaining to scheduling and available seating.

25   In the Figures 2 and 2A embodiment, the service provider computer and the IVR system act as a ticket distributer interface and an available seating announcer, respectively. Information regarding available seating is provided by the ticket distributer to the service provider computer. The IVR service module, which is connected to the

30   service provider computer, then transfers this information to the telephone terminal (or screen phone or interactive cable TV box, both of which are described hereinafter). The type of information sent is

determined by model number data sent to the central computer during the initial diagnostic check, and depends on whether the information is to be presented audibly to the subscriber, displayed on an LCD display or screen, or displayed on a television set. It is understood that all of

5   the transmitted information need not be in the same format. For example, certain information might be displayed, while other information is transmitted audibly.

In order to prevent mistakes in a ticket order, the main processor 70 can be made responsive to confirmation information

10  keyed in by the subscriber using the telephone terminal 30. In particular, the confirmation information would be indicative of whether the subscriber wishes to purchase tickets for the event and seat currently being announced by the available seating announcer 140.

Once a ticket order is placed and confirmed, the main

15  processor 70 causes the printer 36 to generate a ticket having indicia indicative of the artist performing, seat number, place of performance, and date and time of performance in the case of a concert; the teams playing, date and time of the event, and the stadium in the case of a sporting event; and the airline, the date, time and place of departure,

20 . and the destination in the case of a flight.

In order to prevent the use of fraudulent tickets, the central computer 10 can further comprise a bar-code generating device 150 and a means 160 for communicating with a plurality of optical scanners 170. Each optical scanner 170 is positioned at a location

25  where tickets from the telephone system 2 are tendered. For example, several optical scanners 170 might be located at an airport, several others at a theater, and still others at a stadium. In the case of lottery tickets, an optical scanner 170 might be located at a liquor store or convenience store that sells and redeems tickets for cash to non-

30  subscribers of the telephone system 2, as well as subscribers. In operation, the bar-code generating device 150 generates a bar-code which is printed on each ticket purchased using the telephone system

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2 and which is readable by each optical scanner 170. The means 160 for communicating with the optical scanner 170 then provides each optical scanner 170 with information indicative of which bar-codes are valid so that the optical scanner 170 can distinguish authentic bar-

5     codes from fraudulent ones. Using this arrangement, fraudulent tickets can be detected at the point where they are tendered.

Because bar codes typically are treated as merely another font, the logic required to print them is already present in the printer's controller circuit board (not illustrated). Optical scanners 170 are

10    known and include those which function as peripheral devices attachable to the serial or parallel I/O port of virtually any computer. In addition, because the optical scanners 170 are typically remotely located, they can be connected to the central computer by a long cable, or alternatively, can be connected using wireless

15    communications. Examples of such wireless communication are LAN connections and serial connections such as Proxium spread spectrum communications.

If the operator of the telephone system 2 is not an initial seller of lottery tickets, the central computer 10 of the present

20    ·invention can further comprise a lottery ticket distributer interface 180 for communicating automatically with a computer system of at least one lottery ticket distributer 185 so that lottery tickets can be purchased using the telephone system 2. According to such an embodiment, the information keyed in by the subscriber includes

25    desired lottery numbers, types of lottery tickets, and number of tickets. This information is then received by the main processor 70 via the tone sensor 60. In response, the main processor 70 causes the information to be displayed on the display 38 of the telephone terminal 30 prior to completing the ticket purchase transaction. Preferably, the ticket

30    purchase transaction cannot be completed by the main processor 70 until the subscriber enters a confirmation via the keypad of the telephone terminal 30.

The lottery ticket distributer interface 180 will likely vary from state to state. Currently, most states have their own lottery ticket printing terminals, each of which is linked to a central lottery computer. The communications between these terminals and the

5 central lottery computer are established using high security data encrypted modem interfaces. According to the embodiment of Figures 2 and 2A, the service provider computer simply emulates a lottery printing terminal already in the particular state's lottery system. This includes the transmission of lottery selection number to the state's

10 lottery computer system. Validation of lottery tickets can be performed by the state.

In the event that the operator of the telephone system 2 is not the initial seller of products which can be ordered via the telephone system 2, the central computer 10 further comprises a store

15 communication device 190 for communicating with the automated product ordering computer of a store 195. In particular, the main processor 70 is programmed to receive via the keypad of the telephone terminal 30 a product number corresponding to a particular product sold by the store. This product number can be obtained, for example,

20 from a catalogue or advertisement which is provided to each subscriber. The display 38 of the telephone terminal 30 is preferably responsive to the main processor 70 so as to display 38 the product number for confirmation purposes. In this regard, the main processor 70 can be programmed to complete a purchase transaction of the

25 product only after having received a keyed-in confirmation from the subscriber. After the purchase transaction is complete, the printer 36 of the telephone terminal can be used to print a receipt which, in turn, documents the order.

According to the embodiment of Figures 2 and 2A, the

30 service provider computer includes software which allows the service provider computer to function as a store communication device 190. Preferably, the service provider computer further includes product

information stored on disk, which product information is used to complete product purchase transactions. Transactions for the purchase of goods or services, are typically executed on a local level between the service provider computer and each telephone terminal.

5    Whenever a sale is made, the information pertaining to that sale is maintained in the service provider computer, and on a periodic basis, the various store computers poll the various service provider computers so as to request transfer of any outstanding sales orders. Having received the order, the store verifies the credit card, ships the

10   purchased product to the subscriber, and collects the money from the credit card company. Both the service provider and the store maintain records of all sales, and on a periodic basis, the service provider bills the store for commissions based on sales.

According to a preferred embodiment of the present

15   invention, the printer 36 prints ticket indicia onto an adhesive-backed material which can be subsequently attached to ticket stock material. Alternatively, the printer 36 can print a voucher which is subsequently redeemed at a "will call" window, or which is later attached to an adhesive piece of ticket stock material. As a still further alternative,

20   the printer 36 prints the indicia on a plastic material which is thereafter electrostatically fixed to ticket stock material. Such plastic materials are known, for example, in the art of photographic album manufacturing, where thin pages of plastic are electrostatically attached to thicker pages of paper stock material.

25   An exemplary operation of the telephone system 2 will now be described.

Initially, a subscriber of the telephone system 2 is provided with a telephone terminal 30 which simply plugs into any conventional phone jack (2 or 4 wire conventions) and is able to

30   function as a conventional telephone. In addition, the subscriber is provided with an instruction manual which lists at least one service telephone number which, when dialed, will automatically connect the

telephone terminal 30 to a central computer 10. The manual also includes a listing of, and seating diagrams for, various airplanes, concert halls, and stadiums; a schedule of upcoming performances, sporting events, and flights each having a performance, event, or flight

5    number associated therewith; a listing of stores which can be accessed by the system; and a listing of the various lottery games which can be played by way of the telephone system 2. In addition, the subscriber is also provided with catalogues from the stores which can be accessed. Each catalogue includes an item number for each

10    product sold by the particular store. Both the catalogues and the manual can be updated on a regular basis, for example, monthly.

To use the system, the subscriber first calls one of the service numbers using the TOUCH-TONE keypad of the telephone terminal 30, or alternatively, where the microprocessor 31 is

15    programmed for automatic dialing of pre-determined service numbers, the subscriber merely presses a single function key on the telephone terminal 30, which function key effects automatic dialing of a service number. The subscriber's call is then answered by the answering machine 50 of the central computer 10. The answering machine 50

20    directs the subscriber to enter an authorization number via the keypad of the telephone terminal 30. This authorization number is then verified and access to the system 2 is granted or denied based on the result of this verification. The answering machine 50 then directs the subscriber to press a particular key corresponding to the transaction he

25    wishes to make. In particular, various possible transactions are recited in a menu-like manner and the subscriber merely has to choose one of the transactions.

After the subscriber makes their selection by pressing the appropriate key, the tone sensor 60 in the central computer 10 detects

30    which key was pressed. This information is then transmitted to the main processor which, in turn, activates the instruction announcer 80.

The instruction announcer 80 responds by providing the

subscriber with additional information corresponding to the transaction selected, and then requests information from the subscriber, which information is entered via the keypad of the telephone terminal 30. The information requested by the instruction announcer 80 can include

5    the number of tickets; the performance, event, or flight number, or the seating section desired depending on the transaction selected.

In the case of a concert or sporting event ticket, for example, the instruction announcer 80 might request a code corresponding to the performance schedule the subscriber is using.

10    This code is then used to verify that the schedule is still valid. If the schedule is no longer valid, the instruction announcer 80 proceeds through a longer menu describing the performance schedule. However, assuming the schedule is still valid, the instruction announcer 80 requests the particular performance number associated with the desired

15    performance. Additionally, the instruction announcer 80 requests information indicative of the desired seating section and number of tickets. If no seats are available in the desired seating section, several choices of the best seats for that particular performance in the same price range would be displayed on the display 38. Preferably, the

20    microprocessor 31 is programmed such that these several choices which appear on the display 38, can be scrolled through using a predetermined set of keys on the keypad. Accordingly, the desired seating can be selected by scrolling to the particular seat. If none are satisfactory, the subscriber can then be directed to choose a different

25    seating section. The same processes would then be repeated for the different section.

After each information request, the tone sensor 60 detects the subscribers response and transmits this information to the main processor 70. The main processor then processes the selected

30    transaction, but prior to completing the transaction, causes the instruction announcer 80 to recite the results of the current transaction. In addition, the display 38 shows each response entered

by the subscriber as it is entered. The instruction announcer 80 then requests a confirmation from the subscriber indicating whether the current transaction is exactly what the subscriber wants. In particular, the confirmation is entered via the keypad of the telephone terminal

5    30.

Once the transaction is confirmed, the main processor 70 causes the instruction announcer 80 to request a financial account number from the subscriber. This account number can refer to a credit card account, or any other financial account which can be credited or

10    debited for payment purposes, and can include the type of account (for example, "1" for VISA and "2" for MASTERCARD), expiration date, etc. Specifically, the financial account number is entered by the subscriber via the telephone terminal 30, and is received by the account number receiving device 120 which, in turn, provides this

15    information to the main processor 70. The main processor 70 then activates the account communications device 110 which is linked to a financial institution holding the particular account.

Once the account communications device 110 is connected to the financial institution, financial account information pertaining to a financial account of the subscriber is accessed by the

20    central computer 10. Preferably, the account communications device 110 not only detects the available funds, but also credits or debits the subscriber's account in accordance with the desired transaction.

However, before access is granted to the subscribers

25    account, the subscriber is instructed to enter a personal identification number corresponding to the particular account being accessed. The PIN verification device 120 via the tone sensor 60 receives this personal identification number, and verifies the personal identification number based on financial account information received through the

30    financial account communications device 110. Access to the financial account is thereafter granted or denied based on the validity of the personal identification number. Alternatively, the PIN number could be

a service provider PIN number, not directly related to any financial institution.

Once the transaction is completed by appropriately debiting the subscribers account, the main processor 70 activates the

5    bar-code generating device 150 of the central computer 10. The bar-code generating device responds by generating a bar-code indicative of a validation number, which validation number can include the subscriber's personal identification number. The validation number or other information is then transmitted by the optical scanner

10   communication means 160 to the optical scanners 170 at the location where the ticket is to be tendered. The optical scanners 170 read a bar code validation number and compare it to a number in a validation computer. Alternatively, a small wireless computer and scanner receives validation numbers prior to each performance. The optical

15   scanner reads a bar coded number from a ticket and compares it to valid numbers.

Alternatively, validation computers can be provided at the event or location where the tickets are to be used. All the validation numbers for the particular event or location are maintained in the

20   validation computers. In particular, the validation numbers are downloaded into the validation computers prior to the intended period of use. When a ticket holder surrenders his/her ticket, either to an attendant or to an automated ticket scanning device, an optical scanner 170 reads the bar-code on the ticket, compares the read bar-

25   code against a list of valid numbers contained within the validation computer, and either accepts the ticket as valid if a match is found or rejects it if no match is found. If a ticket is accepted, the validation number corresponding thereto, is eliminated from the list of valid numbers.

30   Next, the printer 36 is activated to print ticket indicia on an adhesive label or plain paper or electrostatic plastic. The ticket indicia preferably include the generated bar-code and numerical

equivalent thereof, along with other information such as the artist

performing, seat number, place of performance, and date and time of

performance in the case of a concert; the teams playing, date and

time of the event, and the stadium in the case of a sporting event; and

5    the airline, the date, time and place of departure, and the destination in

the case of a flight. After printing, assuming all the tickets are correct,

the adhesive label is removed from the printer and fixed to ticket stock

material previously provided to the subscriber. The subscriber then

enters a second confirmation via the keypad of the telephone terminal

10    30, which confirmation actually finalizes the transaction.

        If, however, any one of the tickets is printed erroneously,

the subscriber must hit a key indicating that an error has occurred.

The system will then display the last four digits of the bar-code

numbers of all the tickets issued, and the subscriber is directed to

15    scroll using the display 38 to the ticket number corresponding to the

erroneous ticket, and to hit the # symbol once there. This process is

repeated until all the erroneous tickets are accounted for.

        The subscriber is next asked several questions and

directed to identify the nature of the error by pressing a key on the

20    keypad indicative of the error. After the subscriber responds, new

tickets are printed and the bar-code number of each erroneous ticket is

invalidated. If the problem persists the subscriber can cancel the entire

transaction, and be connected to a customer service operator which

will help them. After all tickets are printed correctly, the subscriber

25    enters the second confirmation thereby finalizing the transaction.

        Thereafter, when the tickets are tendered at a location

having at least one of the optical scanner 170, the optical scanner 170

scans the bar-code on each ticket and determines whether the bar-code

is valid. If valid, admission to the particular event or flight is permitted

30    and the particular validation number represented by the bar-code is

removed from the list of valid codes. The ticket is thus invalidated

after its first use. If the bar-code is not valid, admission can be denied

thus preventing the use of fraudulent tickets.

In the case of lottery tickets, the ticket purchase transactions are effected in the same manner as the purchase of other tickets. Here, however, the instruction announcer 80 requests

5 information pertaining to the number and type of tickets desired, and also pertaining to whether random number generation is to be used. When random number generation is not used, the instruction announcer 80 asks the subscriber to enter the desired lottery number. These lottery numbers are entered via the keypad of the telephone

10 terminal 30. The display 38 then displays each number so that the subscriber receives a visual indication of which lottery numbers have been received by the main processor 70.

Thereafter, the subscriber is directed to press a key indicative of whether he wishes to confirm the entered lottery number.

15 Only after receiving this confirmation is the lottery ticket purchase transaction completed.

It is noted that some states prohibit the use of credit card accounts to purchase lottery tickets. Therefore, in the case of lottery tickets, the main processor can be programmed to prevent such use of

20 credit card accounts, and instead insist on a bank account number, or the like.

Once the transaction is completed, the printer 36 prints the resulting lottery tickets on either adhesive labels or on stock material. Each ticket preferably includes a bar-code as discussed

25 above. In addition, the central computer preferably stores lottery purchase information so that winners can be readily identified.

When a product purchase transaction is desired rather than a ticket purchase transaction, the subscriber presses the key corresponding to product purchases, in response to the menu-like

30 recitation of options by the answering machine 50. The tone sensor 60 in the central computer 10 is then activated to detect which key was pressed. This information is transmitted to the main processor

which, in turn, activates the instruction announcer 80. The instruction announcer 80 requests a store number indicative of the particular store where the desired product is sold. After this store number is keyed in by the subscriber, a product number is requested. The product

5 number, which can be found in one of the catalogues provided to the subscriber, is then displayed on the display 38 for confirmation purposes. If a confirmation is received by the central computer 10 from the subscriber, the transaction is completed. As in the case of lottery and other ticket purchases, the subscriber can be asked for a

10 financial account number and personal identification number. Here, however, after the transaction is completed, a receipt is printed by the printer 36 rather than a ticket. The receipt can include any information indicative of the completed transaction, such as the items ordered, total cost including shipping and handling, and the date each item is

15 expected to be delivered. In addition, a coupon can be printed to encourage further shopping.

The communication links from the central computer 10 to the financial institution, the ticket distributer, the lottery ticket distributer and the store are preferably telephone lines; however, it is

20 understood that any other type of communications link can be utilized.

In addition, a combination of audio communications and the display 38 of the telephone terminal 30 can be used to receive stock market quotes and bank balances to pay bills. In order to maintain accurate records, a receipt of each such inquiry can be

25 obtained using the printer 36.

An embodiment of the present invention using a Zilog Z89C67 dual processor and Zilog's Telephone Toolbox Software will now be described with reference to Figures 2 and 2A.

The dual processor includes a conventional Z8

30 microprocessor used for primary control, and an advanced DSP (Digital Signal Processor) used for high performance analog signal processing. The service provider computer can be realized using a modified IVR

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computer system available from any one of a plurality of companies such as Apex Voice Communications, Applied Voice Technology, ATD systems, and AT&T Conversant Voice Systems.

5    The IVR service module illustrated in the exemplary circuit of Figure 2 is designed using the Zilog Z89C67 dual processor, with an external Z8 control ram, an external audio ram, and a CODEC phone interface module.  The CODEC phone interface module is designed with a hybrid front end which includes a transformer for isolation, a 2 or 4 wire phone line converter, an off-hook relay switch, as well as a noise
10   cancellation circuit.  Preferably, the service provider computer system uses multiple IVR service modules to accommodate multiple simultaneous users.  Depending on the size of the overall system, multiple service provider CPU's may be networked together.  The service provider computers are connected via modems to the various
15   stores, ticket distributors and financial institutions.  The IVR service modules are connected to the telephone network using individual phone lines connected through a rotary hunt group function at the telephone company's central office.  This way, the subscriber merely calls the service provider number, and the rotary hunt group service
20   places the call with any available IVR service module.

When the call is placed to an IVR service module, the ring current is sensed by the digital signal processor via the CODEC, and causes an off-hook condition to occur.  The Z8 controller software then begins an interactive voice response process by retrieving the
25   appropriate digital voice data from memory, and then passes this data through the DSP where the DSP software prepares the message for transfer via the CODEC which translates the digital data back to an analog signal that the subscriber's telephone terminal will receive as an audio instruction to press a particular key on the terminal's keypad.
30   The pressing of the key will result in the generation of 1 of 16 unique Dual Tone Multi-Frequency (DTMF) signals.  The IVR service module senses the DTMF tone sent by the subscriber's telephone terminal in

response to the preceding message. As a function of the DTMF tone received, another message specific to that tone is retrieved from memory. This process continues through the various menus with an announcement responded to by a DTMF tone, and a tone responded to

5    by an announcement until the subscriber is to a point where the IVR service module transfers data via a MODEM or DTMF codes to the telephone terminal.

The present invention could use either DTMF or MODEM technology, with each DTMF tone representing a nibble (4 bits) of

10   data. The modem function is faster, and typically implements error correction/detection functionality making it the preferred method.

It is important to note that, according to this embodiment, the telephone system sends both voice messages and digital data across the same phone line during the same data exchange session.

15   By contrast, commercial off-the-shelf IVR systems would require some degree of modification. By using a combination controller such as the Z89C67, there is a seamless interface between the digital (Z8) and the analog (DSP) technologies.

The digital data sent to the subscriber's telephone terminal

20   is used to either display data on the LCD, or to drive the printer. Valid data transferred in either direction uses a synchronizing burst of 1's and 0's to mark the beginning of valid data. In particular, multiple 1's followed by a zero to mark the beginning of valid data is a common synchronizing technique. A special code that precedes the data going

25   to the telephone terminal determines the data's destination as either the printer or the LCD display. Other codes sent to the printer specify form control, font style and the type of bar-code to be printed.

Whenever data is sent to the telephone terminal, a filter within the DSP function senses that the signals being received are

30   digital data and not voice. The microcontroller uses this information to enable the data circuits and to mute the voice circuits. To this end, there is transmitted, immediately ahead of a data transmission, a burst

of a signal at a frequency and duration which is different from those that generally characterize voice transmissions. For example, this may be a sustained burst of 2,800 Hz for 250 milliseconds. The mute function of the DSP at the printer phone terminal (Fig. 2A) is

5 programmed to detect this burst, functioning as a synthetic filter for its frequency. In response, the Z8 commands the sound received through the telephone to be muted. The end of a data transmission is conventionally accompanied by a code which so indicates and this is used to reactivate the telephone, in preparation for voice reception.

10 Without such muting during data transmissions, the subscriber would hear not only the voice, but also the data signals. Since these have no meaning for the human ear, they would constitute a serious annoyance to the subscriber and would also be a source of confusion, since the subscriber would not be sure whether to pay

15 attention to them or not.

Furthermore, by quickly switching between voice and data in the manner described above, both can be used to provide the highest degree of flexibility with the interactive voice/data menu function.

20 Whenever a product or service choice is made, the key information related to that decision is presented in the LCD display with a star cursor marking the active cell. If the subscriber agrees with the choice, the subscriber will be prompted to generate a combination of DTMF tones such as those produced by depressing the * and #

25 keys. If the subscriber disagrees with the information presented on the LCD display, a different key or key combination can be used. If the subscriber presses the keys indicating agreement with the selection, the display on the subscriber's telephone terminal is cleared, and the subscriber's choice will be echoed back as the only entry on the LCD

30 display. The subscriber will then be given another opportunity to agree or disagree with the selection by depressing certain keys.

For the initial part of the menu selection process, all

decision information and announcement data can be maintained in the local storage of the IVR service module. Once the subscriber enters the specific transaction of interest such as shopping or theater tickets, it is necessary to interface with the service provider computer. The

5  service provider computer is on-line via MODEM or WAN connections with all of the individual vendors/shopping tenants and financial institutions. For example, seating information data, required for best available seats for a particular performance, is accessed using the ticket distribution software in the main CPU which is designed to

10  interface seamlessly with a ticket distribution computer system where the specific seating data is maintained. The ticket distribution computer may be on-line with numerous other ticketing organizations, such as those that operate out of a shopping mall, or that have a human attendant telephone service. The telephone system of the

15  present invention simply represents another form of ticket outlet. It should be noted that for ticket charges, the ticket distributor can process the financial charge verification and money collection.

The service provider computer maintains software for each vendor/tenant and financial service function, and utilizes that

20  software in accordance with the choices made by the subscriber. That software will either interface back directly with the IVR service module, or will act as a data conduit or router between the IVR service module and the vendor/tenant's computer system.

With regard to the PIN and account verification functions,

25  the DTMF tones are used to transmit data from the subscriber, and then transfer the resulting information to the service provider computer for account verification. Once the account is verified, the system continues with the menu selection process.

As can be seen in Figure 2A, the telephone terminal can

30  include the same dual processor controller as the IVR service module. The second CODEC is used to support a speaker phone function. All of the standard telephone functions such as keypad scanning, DTMF

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tone generation, on-hook/off-hook switching, speech circuits, and
finger function are accomplished with this basic Z89C67 circuit. As
mentioned above, the Z89C67 also has modem functionality, DTMF
detection, Voice/Data detection and a powerful microcontroller capable

5      of driving the printer and LCD display.

The telephone system can further comprise a portable
electronic security key issued to each subscriber of the telephone
system, and a corresponding key reader mounted on each telephone
terminal. The primary purpose of the security key is to prevent

10     unauthorized use of the telephone systems. In particular, the security
key contains an electronic non-volatile memory and a pre-written
electronic personal ID code as well as several other encrypting numbers
which had previously been written into the key memory. These codes
are maintained in a customer data file in the service provider computer.

15     When transmitted from the telephone terminal to the central computer,
the personal ID code is encrypted with the subscriber's PIN data and a
special transmission authorization code, which together define a unique
number. Even if someone were to monitor the subscriber's phone line,
they would not be able to decipher all of the variables in the number

20     · and thereby illegally use a subscriber's PIN to order merchandise,
tickets or services. In like manner, when a ticket is printed, an
authorization code is sent, which is encrypted with the security key
data and the subscriber's PIN to create a totally unique number known
only by the service provider computer. Since the telephone terminal

25     has access to the encryption code, the telephone terminal is able to
receive the encrypted authorization number and recreate the
authorization number for validation purposes.

A preferred method of using the telephone system and
security key arrangement will now be described.

30     Initially, the central computer requests that the subscriber
enter his/her PIN number via the keypad of the telephone terminal. As
the subscriber enters the PIN number, that number is transmitted to the

central computer using DTMF data transmission techniques.

As previously noted, the initial diagnostic check of the telephone terminal had provided to the central computer the model number of the telephone terminal currently being used. Therefore, the computer already knows whether that terminal is equipped with a security key reader. If it is, the central computer next requests that the telephone terminal echo back the data continuing that request, but in an encrypted format based on the encryption code contained in the ID portion of the memory of the security key. This sequence positively identifies the user as having a valid security key which matches the PIN number which was initially entered.

Thereafter, if a purchase is to be made using the subscriber's credit card number and information relating thereto, that information and credit card number are requested and are then transmitted by the terminal using a separate financial encryption code contained in a second location in the memory of the security key. By operating the telephone system in this manner, persons monitoring the telephone call are prevented from deciphering the credit card number of the information relating thereto.

In addition, when tickets are printed, a third encryption code is used to encrypt an authorization code sent with each ticket. The reason for using multiple encryption codes is to add extra levels of security. The encryption code is never transmitted over the telephone lines, and therefore cannot be deciphered. However, because the ticket issuing computer does have access to the subscriber's encryption code, as well as the authorization code, it is able to recreate the authorization number for validation purposes.

Since the security key is portable, it can be used with any phone terminal equipped with a key reader, while still identifying the actual subscriber/user. This is an additional important benefit of the security key in its preferred embodiment. Suitable keys and key readers are known in the art. For example, the key may be

Model DK1000 and the reader may be Model KC4210, both from Datakey, Inc., 407 West Travelers Trail, Burnsville, MN 55337. Another suitable key is Model LCS 1000 from the same company.

5     Since these components are entirely conventional, they are not illustrated in detail in the drawings. However, in Fig. 2A they are represented in block form and in Figures 3,4 and 5 the opening through which the key is inserted into the key reader is designated by reference numeral 270.

10     With reference to Figure 3, the telephone terminal can include a housing 210 having a cover 220 for the printer's paper 221; a paper exit 230, a volume control 240; a speakerphone speaker 250; a keypad 260; a relatively small LCD display 38'; and a security key reader opening 270. Included in the keypad 260 are several function keys F1, F2 for "fastdialing" the central computer, several conventional

15   telephone keys, and at least two scrolling keys 280 for scrolling the LCD display 38'. Also illustrated is a star cursor 290 which denotes a selected one or ones of the displayed items.

    Alternatively, with reference to Figures 4 and 5, the telephone terminal can comprise a housing 210' having a cover 220 for

20   the printer's paper; a paper exit 230; a volume control 240; a speakerphone speaker 250; a keypad 260'; a relatively large LCD display screen 38"; and a security key reader opening 270. Included in the keypad 260' are keys for "fastdialing" the central computer; conventional telephone keys 281; keys 280' for controlling movement

25   of a cursor on the display screen 38"; keys 282 for adjusting the intensity of the display screen 38"; and several additional function keys 283. By using an LCD screen 38", it is possible to provide seating diagrams by way of the display. Preferably, the screen 38" is pivotally mounted on the telephone terminal so that it can be collapsed

30   flat against the top of the telephone terminal when not in use (as illustrated in Figure 5).

    Similarly, with reference to Figure 6, the present invention

can be practiced along with a cable television interactive converter box printer 300 (CTICBP) which can also print receipts, tickets, coupons, etc. Interactive television provides the subscriber with the ability to interact with images displayed on a television in order to cause a

5    desired result. Currently, interactive television systems are being used to order and play games, order pay-per-view movies, purchase items and services, and now with the addition of Applicant's integrated printer and support infrastructure, interactive television can be used to printout tickets, receipts, coupons, bank balances, or stock quotes.

10    The CATV interactive cable box is an electronic device which is installed in a subscriber's residence or office, and is connected to a television set therein. In particular, the box is used to communicate with transmission equipment located at the cable station's headend, and to convert CATV transmitted broadband signals

15    into signals suitable for display on conventional television sets. Interactive converter boxes are predominately comprised of digital circuitry thereby allowing a natural interface to a printer device.

The CTICBP 300 uses the same type of printer mechanism 310 as is contemplated for the present invention. The CTICBP 300 is

20    connected using cable plant, wireless, satellite, or phone line using either twisted pair or fiber, communications to the transmission facility's headend equipment. The service provider for operating the central computer of the present invention and hence providing various services can either be affiliated with the cable television station or can

25    be independent thereof. All transactions can be menu driven from information displayed on the subscribers television. A remote control device (not illustrated) is used to generate the responses to the menu inquiries. When the initial connection is made with the service provider, status information, model number and revision number are

30    transmitted back to the central computer. Since the central computer is aware that it is communicating with an interactive television converter box, it sends data formatted for that particular device. When

ordering tickets, a full screen display of available seats for the desired performance or event therefore can be provided and updated immediately. There can also be an zoom feature and multicolor display of information that allows accurate visualization of proposed seating.

5          The preferred embodiment of the CTICBP 300 illustrated in Figure 6 includes a housing 305, a printer 310, a power button 315, a display 320, a sensor 325 for receiving messages from a remote control device, and a CD-ROM memory 330.

While the present invention has been described with
10     reference to several preferred embodiments, it is understood that the invention is not limited to these embodiments. Various modifications within the scope of the present invention, will become subsequently apparent to those have ordinary skill in the art. Combining two or more of the foregoing devices, for example, into a single device such
15     as an instruction announcer, answering machine and tone sensor in one device, is well within the scope of the present invention. It is further understood that the main processor may be constructed and programmed to perform the functions of some of the foregoing devices. In this regard, the main processor may include, by virtue of
20     its construction and programming, a tone sensor, account number receiving device, PIN verification device, a memory device, etc. Accordingly, it is further understood that the scope of the present invention is not limited by the illustrated embodiments, but rather is limited only by the scope of the appended claims.

We claim:

1.      A telephone system for ordering different types of tickets or coupons, said telephone system comprising:

at least one telephone terminal for linking a subscriber of the telephone system, said at least one telephone terminal comprising a microprocessor, a telephone having a keypad, a data modem, and a printer for printing ticket indicia, said printer being connected and responsive to said data modem and said microprocessor; and

a central computer linked by telephone lines to said at least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for communicating with the data modem of said at least one telephone terminal;

an answering machine connected to said telephone lines and responsive to incoming telephone calls, for answering the incoming telephone calls with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal correspond to ticket purchase transactions the subscriber can make with the central computer;

a tone sensor connected to said telephone lines and responsive to tones generated by the telephone terminal, for detecting which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone sensor, for processing said ticket purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting ticket purchase data to said printer via said interface device, said telephone lines, and said data modem; and

an instruction announcer connected to and controlled by said main processor, for selecting from a plurality of pre-determined instructions, the particular instruction that corresponds to a current ticket purchase transaction, and for announcing said particular instruction to the subscriber via the telephone terminal.

2.      The telephone system of claim 1, wherein said central computer includes a memory device for storing data related to each ticket purchase transaction which occurs between said subscriber and the central computer.

5      3.      The telephone system of claim 1, wherein said central computer further comprises:

an account number receiving device connected to the tone sensor, for receiving at least one financial account number from the subscriber through said telephone terminal;  and

10      an account communications device for communicating automatically with a computer system of at least one financial institution, whereby financial account information pertaining to a financial account of the subscriber can be accessed by the central computer.

15      4.      The telephone system of claim 3, wherein said account communications device is capable of crediting or debiting the subscriber's financial account in accordance with said ticket purchase transactions.

5.      The telephone system of claim 3, wherein said central

20      computer further comprises a PIN verification device connected and responsive to said tone sensor and also connected and responsive to said account communications device, for receiving a personal identification number from the subscriber via the telephone terminal, and for verifying the personal identification number based on said

25      financial account information, said PIN verification device being further connected to said main processor so that the main processor can deny or grant ticket purchase transactions based on said verification of the personal identification number.

6.      The telephone system of claim 1, wherein said main

30      processor is programmed to receive an authorization number from said subscriber through said telephone terminal, verify said authorization number, and grant or deny said ticket purchase transactions based on

whether the authorization number is valid.

7. The telephone system of claim 1, wherein said central computer further comprises:

a ticket distributer interface for communicating

5 automatically with a computer system of at least one ticket distributer, whereby information pertaining to scheduling and available seating for airline flights, sporting events, and concerts can be accessed by the central computer; and

an available seating announcer connected and responsive

10 to said ticket distributer interface, for automatically announcing via said telephone terminal said information pertaining to scheduling and available seating, said main processor being responsive to confirmation information keyed in by the subscriber using the telephone terminal, said confirmation information being indicative of whether the

15 subscriber wishes to purchase tickets for the event and seat currently announced by said available seating announcer.

8. The telephone system of claim 7, wherein said main processor and said microprocessor cause said printer to generate a ticket having indicia indicative of the artist performing, seat number,

20 place of performance, and date and time of performance in the case of a concert; the teams playing, date and time of the event, and the stadium in the case of a sporting event; and the airline, the date, time and place of departure, and the airline in the case of a flight.

9. The telephone system in claim 1, wherein said central

25 computer further comprises a bar-code generating device for generating a bar-code on each ticket purchased using the telephone system, said printer being responsive to said bar-code generating device such that a bar-code is printed on every ticket generated by the printer, said bar-codes being readable by an optical scanner in order to verify the

30 authenticity of tickets issued by the telephone system.

10. The telephone system of claim 9, wherein said central computer includes means for communicating with at least one optical

40

scanner at a location where tickets from the telephone system are tendered, said means for communicating with the optical scanner providing information indicative of which bar-codes are valid so that said optical scanner can distinguish authentic tickets from fraudulent

5    tickets.

11.    The telephone system of claim 1, wherein said printer prints said ticket indicia onto an adhesive-backed material which can be subsequently attached to ticket stock material.

12.    The telephone system of claim 1, wherein said at least

10   one telephone terminal further comprises a display responsive to the microprocessor and the data modem.

13.    The telephone system of claim 12, wherein said central computer further comprises:

a lottery ticket distributer interface for communicating

15   automatically  with a computer system of at least one lottery ticket distributer so that lottery tickets can be purchased using the telephone system, wherein the information keyed in by the subscriber includes desired lottery numbers, types of lottery tickets, and number of tickets, and wherein said main processor receives said information from the

20   subscriber and causes said information to be displayed on the display of the telephone terminal prior to completing the ticket purchase transaction with the computer system of the lottery ticket distributer, said lottery ticket transaction being completed only after receiving a confirmation from the subscriber via the keypad of the telephone

25   terminal.

14.    The telephone system of claim 12, wherein said central computer further comprises a store communication device for communicating with an automated product ordering computer of a store, said main processor being programmed to receive via the keypad

30   of the telephone terminal a product number corresponding to a particular product sold by the store, said display being responsive to the main processor and the microprocessor so as to display the product

number, the main processor being programmed to complete a purchase transaction of the product only after having received a keyed-in confirmation from the subscriber, said printer being responsive to said main processor and said microprocessor so that a receipt is printed at

5    the telephone terminal after the purchase transaction is completed.

15.    The telephone system of claim 12, wherein said main processor is programmed to receive an authorization number from said subscriber through said telephone terminal, to verify said authorization number, and to grant or deny use of the telephone system based on

10    whether the authorization number is valid, and wherein said central computer further comprises:

a store communication device for communicating with an automated product ordering computer of a store, said main processor being programmed to receive via the keypad of the telephone terminal

15    a product number corresponding to a particular product sold by the store, said display being responsive to the main processor and the microprocessor so as to display the product number, the main processor being programmed to complete a product purchase transaction of the product only after having received a keyed-in

20    confirmation from the subscriber, said printer being responsive to said main processor and said microprocessor so that a receipt is printed at the telephone terminal after the product purchase transaction is completed;

an account number receiving device connected to the tone

25    sensor, for receiving at least one financial account number from the subscriber through said telephone terminal;

an account communications device for communicating automatically with a computer system of at least one financial institution, whereby financial account information pertaining to a

30    financial account of the subscriber can be accessed by the central computer, said account communications device being capable of crediting or debiting the subscriber's financial account in accordance

with said ticket purchase transactions and said product purchase transactions;

a PIN verification device connected and responsive to said tone sensor and also connected and responsive to said account

5    communications device, for receiving a personal identification number from the subscriber via the telephone terminal, and for verifying the personal identification number based on said financial account information, said PIN verification device being further connected to said main processor so that the main processor can deny or grant ticket

10   purchase transactions and product purchase transactions based on said verification of the personal identification number;

a ticket distributer interface for communicating automatically with a computer system of at least one ticket distributer, whereby information pertaining to scheduling and available seating for

15   airline flights, sporting events, and concerts can be accessed by the central computer;

an available seating announcer connected and responsive to said ticket distributer interface, for automatically announcing via said telephone terminal said information pertaining to scheduling and

20   available seating, said main processor being responsive to confirmation information keyed in by the subscriber using the telephone terminal, said confirmation information being indicative of whether the subscriber wishes to purchase tickets for the event and seat currently announced by said available seating announcer, said printer being

25   responsive to said main processor and said microprocessor so as to generate a ticket having indicia indicative of the artist performing, seat number, place of performance, and date and time of performance in the case of a concert;  the teams playing, date and time of the event, and the stadium in the case of a sporting event;  and the airline, the date,

30   time and place of departure, and the airline in the case of a flight;

a bar-code generating device for generating a bar-code on each ticket purchased using the telephone system, said printer being

responsive to said bar-code generating device such that a bar-code is printed on every ticket generated by the printer, said bar-codes being readable by an optical scanner in order to verify the authenticity of tickets issued by the telephone system;

5      means for communicating with at least one optical scanner at a location where tickets from the telephone system are tendered, said means for communicating with the optical scanner providing information indicative of which bar-codes are valid so that said optical scanner can distinguish authentic tickets from fraudulent

10    tickets; and

a lottery ticket distributer interface for communicating automatically with a computer system of at least one lottery ticket distributer so that lottery tickets can be purchased using the telephone system, wherein the information keyed in by the subscriber includes

15    lottery ticket information such as desired lottery numbers, types of lottery tickets, and number of tickets, and wherein said main processor receives said lottery ticket information from the subscriber and causes said information to be displayed on the display of the telephone terminal prior to completing the ticket purchase transaction with the

20    computer system of the lottery ticket distributer, said ticket purchase transaction being completed only after receiving a confirmation from the subscriber via the keypad of the telephone terminal.

16.    The telephone system of claim 14, wherein said microprocessor is programmed to perform a diagnostic check of the

25    internal components of the telephone terminal, and to automatically transmit to the central computer a number indicative of a model number of the telephone terminal, a revision number corresponding to a most recent programming of the microprocessor, and an indication of the outcome of the diagnostic check.

30    17.    The telephone system of claim 14, wherein said printer prints said ticket indicia onto an adhesive-backed material which can be subsequently attached to ticket stock material.

18.    The telephone system of claim 12, wherein said display is a liquid crystal display.

19.    The telephone system of claim 12, wherein said display is a liquid crystal display screen pivotally mounted to said at least one

5    telephone terminal, such that said liquid crystal display screen can be collapsed flat against said at least one telephone terminal when not in use.

20.    The telephone system of claim 1, and further comprising a cable television interactive converter box connected to at least one

10    telephone terminal and also connected to a television screen, for displaying information on said television screen which relates to a ticket purchase transaction, said cable television interactive converter box having remote control means for providing said telephone terminal with information keyed in by the subscriber pursuant to said

15    predetermined protocol.

21.    The telephone system of claim 20, wherein said cable television interactive converter box further comprises a second printer for printing ticket indicia.

22.    The telephone system of claim 1, and further comprising

20    an electronic security key for each subscriber having encrypted security data stored in an internal memory thereof;  and security key reader mounted on said at least one telephone terminal, for reading said encrypted security data from said security key and transmitting said encrypted security data to said central computer for verification

25    purposes.

23.    A ticket ordering system for ordering different types of tickets, comprising:

at least one cable television interactive converter box connected to a television screen, for linking a subscriber to the ticket

30    ordering system, said at least on cable television interactive converter box comprising a printer for printing ticket indicia and a remote control unit for inputting data from the subscriber;  and

a central computer linked to said at least one cable television interactive converter box, said central computer comprising:

an instruction processor connected and responsive to said at least one cable television interactive converter box, for receiving

5    commands from a subscriber and responding with data containing a message explaining to the subscriber which buttons on the remote control unit correspond to ticket purchase transaction the subscriber can make with the central computer, for selecting from a plurality of pre-determined instructions the particular instruction that corresponds

10   to a current ticket purchase transaction, and for outputting said particular instruction to the subscriber via said at least one cable television interactive converter box and the television screen connected thereto;

a main processor connected and responsive to said at

15   least one cable television interactive converter box, for processing said ticket purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting ticket purchase data to said printer.

24.    A telephone system for ordering different types of tickets

20   · or coupons, said telephone system comprising:

at least one telephone terminal for linking a subscriber of the telephone system to the telephone system, said at least one telephone terminal comprising a microprocessor, a telephone having a keypad, a data modem, and a printer for printing ticket indicia, said printer being

25   connected and responsive to said data modem and said microprocessor;

a central computer linked by telephone lines to said at least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for

30   communicating with the data modem of said at least one telephone terminal;

an answering machine connected to said telephone lines

and responsive to incoming telephone calls, for answering the incoming telephone calls with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal correspond to ticket purchase transactions the subscriber can make

5      with the central computer;

a tone sensor connected to said telephone lines and responsive to tones generated by the telephone terminal, for detecting which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone

10     sensor, for processing said ticket purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting ticket purchase data to said printer via said interface device, said telephone lines, and said data modem;

an instruction announcer connected to and controlled by

15     said main processor, for selecting from a plurality of pre-determined instructions, the particular instruction that corresponds to a current ticket purchase transaction, and for announcing said particular instruction to the subscriber via the telephone terminal;  and

wherein said printer prints said ticket indicia onto an

20   ·  adhesive-backed material which can be subsequently attached to ticket stock material.

25.    A telephone system for ordering different types of tickets or coupons, said telephone system comprising:

at least one telephone terminal for linking a subscriber of the

25     telephone system to the telephone system, said at least one telephone terminal comprising a microprocessor, a telephone having a keypad, a data modem, and a printer for printing ticket indicia, said printer being connected and responsive to said data modem and said microprocessor; and

30     a central computer linked by telephone lines to said at least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for

communicating with the data modem of said at least one telephone terminal;

an answering machine connected to said telephone lines and responsive to incoming telephone calls, for answering the incoming telephone calls with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal correspond to ticket purchase transactions the subscriber can make with the central computer;

a tone sensor connected to said telephone lines and responsive to tones generated by the telephone terminal, for detecting which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone sensor, for processing said ticket purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting ticket purchase data to said printer via said interface device, said telephone lines, and said data modem;

an instruction announcer connected to and controlled by said main processor, for selecting from a plurality of pre-determined instructions, the particular instruction that corresponds to a current ticket purchase transaction, and for announcing said particular instruction to the subscriber via the telephone terminal;

said at least one telephone terminal further comprising a display responsive to the microprocessor and the data modem;

said central computer further comprising a store communication device for communicating with an automated product ordering computer of a store, said main processor being programmed to receive via the keypad of the telephone terminal a product number corresponding to a particular product sold by the store, said display being responsive to the main processor and the microprocessor so as to display the product number, the main processor being programmed to complete a purchase transaction of the product only after having received a keyed-in confirmation from the subscriber, said printer being

48

responsive to said main processor and said microprocessor so that a receipt is printed at the telephone terminal after the purchase transaction is completed; and

wherein said printer prints said ticket indicia onto an
5  adhesive-backed material which can be subsequently attached to ticket stock material.

26.    A telephone system for ordering different types of tickets or coupons, said telephone system comprising:

at least one telephone terminal for linking a subscriber of the
10  telephone system to the telephone system, said at least one telephone terminal comprising a microprocessor, a telephone having a keypad, a data modem, and a printer for printing ticket indicia, said printer being connected and responsive to said data modem and said microprocessor; and

15  a central computer linked by telephone lines to said at least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for communicating with the data modem of said at least one telephone terminal;

20  an answering machine connected to said telephone lines and responsive to incoming telephone calls, for answering the incoming telephone calls with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal correspond to ticket purchase transactions the subscriber can make
25  with the central computer;

a tone sensor connected to said telephone lines and responsive to tones generated by the telephone terminal, for detecting which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone
30  sensor, for processing said ticket purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting ticket purchase data to said printer via said

interface device, said telephone lines, and said data modem;

an instruction announcer connected to and controlled by said main processor, for selecting from a plurality of pre-determined instructions, the particular instruction that corresponds to a current

5    ticket purchase transaction, and for announcing said particular instruction to the subscriber via the telephone terminal;

said at least one telephone terminal further comprising a display responsive to the microprocessor and the data modem;

said central computer further comprising a store

10    communication device for communicating with an automated product ordering computer of a store, said main processor being programmed to receive via the keypad of the telephone terminal a product number corresponding to a particular product sold by the store, said display being responsive to the main processor and the microprocessor so as

15    to display the product number, the main processor being programmed to complete a purchase transaction of the product only after having received a keyed-in confirmation from the subscriber, said printer being responsive to said main processor and said microprocessor so that a receipt is printed at the telephone terminal after the purchase

20    transaction is completed;  and

said microprocessor being programmed to perform a diagnostic check of the internal components of the telephone terminal, and to automatically transmit to the central computer a number indicative of a model number of the telephone terminal, a revision

25    number corresponding to a most recent programming of the microprocessor, and an indication of the outcome of the diagnostic check.

27.    A telephone system for making different types of purchase transactions,  said telephone system comprising:

30    at least one telephone terminal for linking a subscriber of the telephone system to the telephone system, said at least one telephone terminal comprising a microprocessor, a telephone having a

keypad, a data modem, and a printer for printing purchase data, said
printer being connected and responsive to said data modem and said
microprocessor;  and

a central computer linked by telephone lines to said at
5    least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for
communicating with the data modem of said at least one telephone
terminal;

an answering machine connected to said telephone lines
10    and responsive to incoming telephone calls, for answering the incoming
telephone calls with a pre-recorded message explaining to the
subscriber which buttons on the keypad of the telephone terminal
correspond to purchase transactions the subscriber can make with the
central computer;

15    a tone sensor connected to said telephone lines and
responsive to tones generated by the telephone terminal, for detecting
which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone
sensor, for processing said purchase transactions according to
20    information keyed in by the subscriber and pursuant to a predetermined
protocol, and for outputting purchase data to said printer via said
interface device, said telephone lines, and said data modem;

an instruction announcer connected to and controlled by
said main processor, for selecting from a plurality of pre-determined
25    instructions, the particular instruction that corresponds to a current
purchase transaction, and for announcing said particular instruction to
the subscriber via the telephone terminal;  and

a portable security key comprising non-volatile memory for
storing subscriber information and adapted to transmit said information
30    to said central computer when said key is inserted in said at least one
telephone terminal.

28.    The system of claim 27, wherein said at least one terminal

includes means for reading said information for transmission to said central computer.

29.    The system of claim 27, comprising a plurality of said telephone terminals and wherein said portable security key is adapted

5    to transmit said information when said key is inserted in any one of said terminals.

30.    The system of claim 29, wherein each of said terminals includes means for reading said information for transmission to said central computer.

10    31.    The system of claim 27, wherein said information includes the subscriber's personal identification code and a plurality of other encrypting numbers.

32.    The system of claim 31, including means for transmitting financial information concerning the purchase transaction encrypted

15    with at least one of said encryption numbers.

33.    A telephone system for making different types of purchase transactions, said telephone system comprising:

at least one telephone terminal for linking a subscriber of the telephone system to the telephone system, said at least one

20    telephone terminal comprising a microprocessor, a telephone having a keypad, a data modem, and a printer for printing purchase data, said printer being connected and responsive to said data modem and said microprocessor; and

a central computer linked by telephone lines to said at

25    least one telephone terminal, said central computer comprising:

an interface device connected to said telephone lines for communicating with the data modem of said at least one telephone terminal;

an answering machine connected to said telephone lines

30    and responsive to incoming telephone calls, for answering the incoming telephone calls with a pre-recorded message explaining to the subscriber which buttons on the keypad of the telephone terminal

correspond to purchase transactions the subscriber can make with the central computer;

a tone sensor connected to said telephone lines and responsive to tones generated by the telephone terminal, for detecting

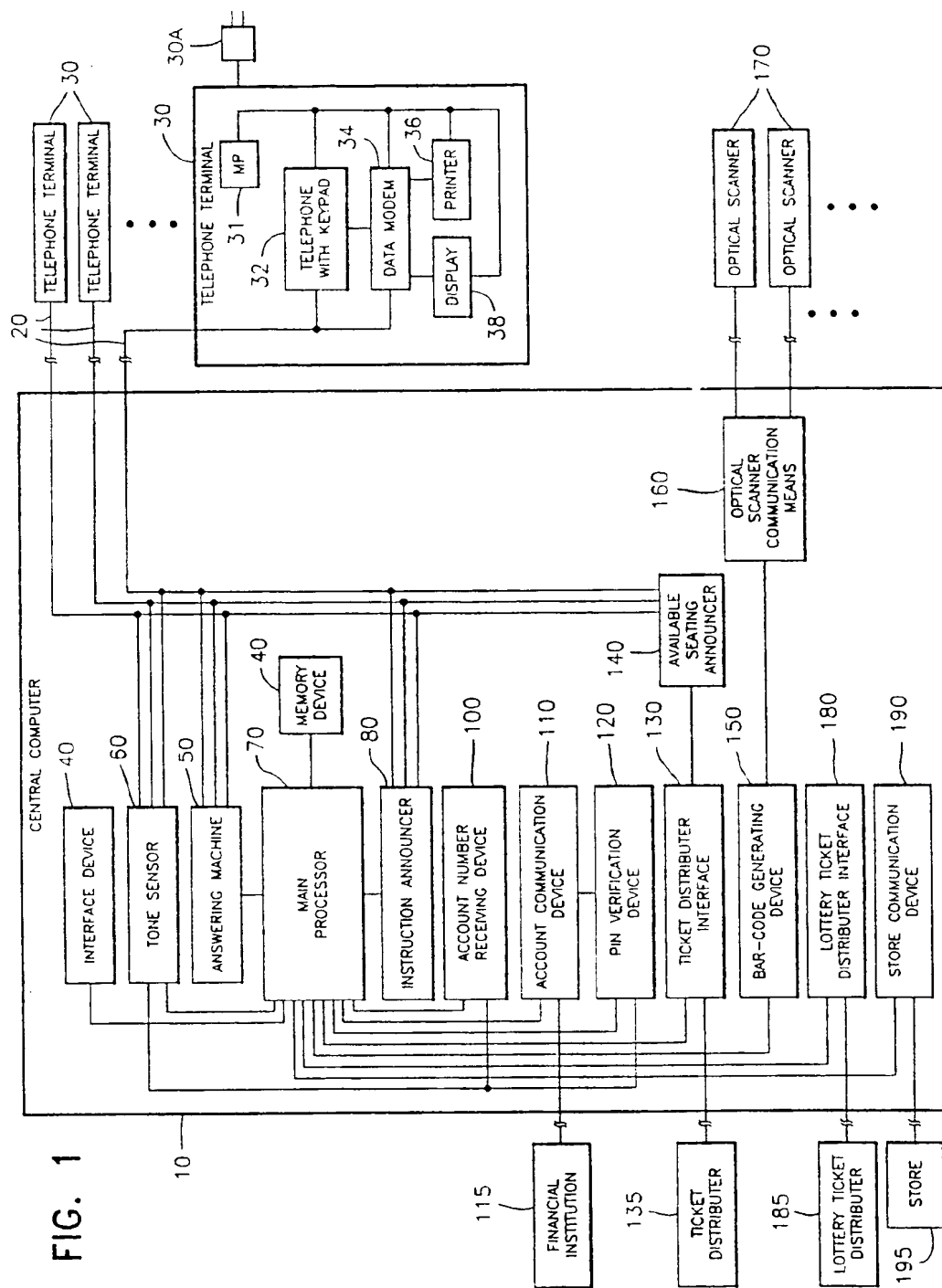5    which keys were pressed on the keypad of the telephone terminal;

a main processor connected and responsive to said tone sensor, for processing said purchase transactions according to information keyed in by the subscriber and pursuant to a predetermined protocol, and for outputting purchase data to said printer via said

10    interface device, said telephone lines, and said data modem;

an instruction announcer connected to and controlled by said main processor, for selecting from a plurality of pre-determined instructions, the particular instruction that corresponds to a current purchase transaction, and for announcing said particular instruction to

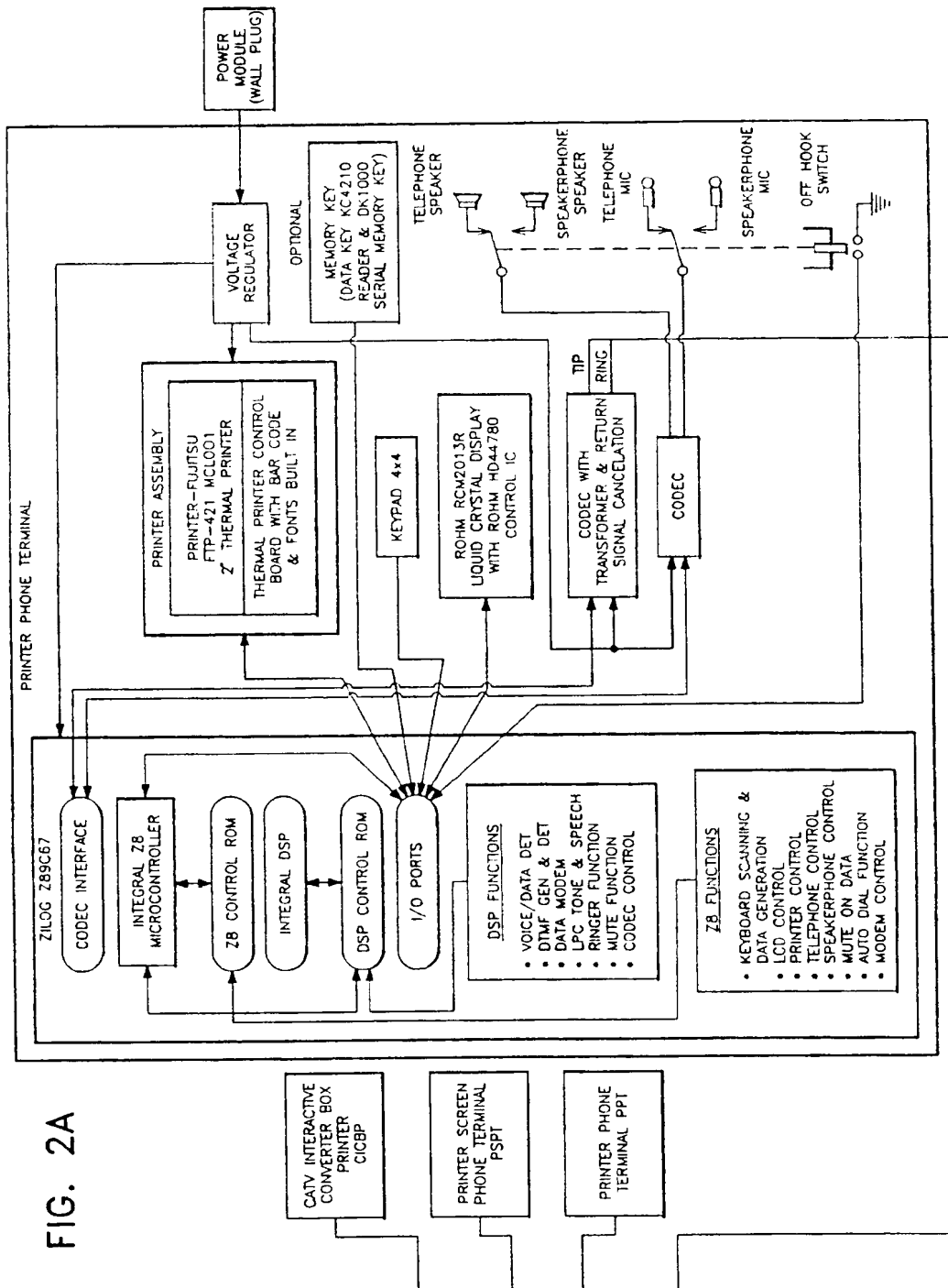15    the subscriber via the telephone terminal;  and

means at said telephone terminal for responding to the transmission of said data from said central computer to prevent the subscriber from hearing the reception of said data.

34.    The system of claim 33 wherein said hearing preventing

20    means comprises means for transmitting from said central computer a burst of a signal of predetermined frequency at the beginning of each data transmission and means at said terminal to detect said burst and to mute the telephone of said terminal in response to said detection.

35.    The system of claim 34, wherein the end of a data

25    transmission from said central computer is denoted by a predetermined code, and said terminal includes means for responding to said code to unmute said telephone.
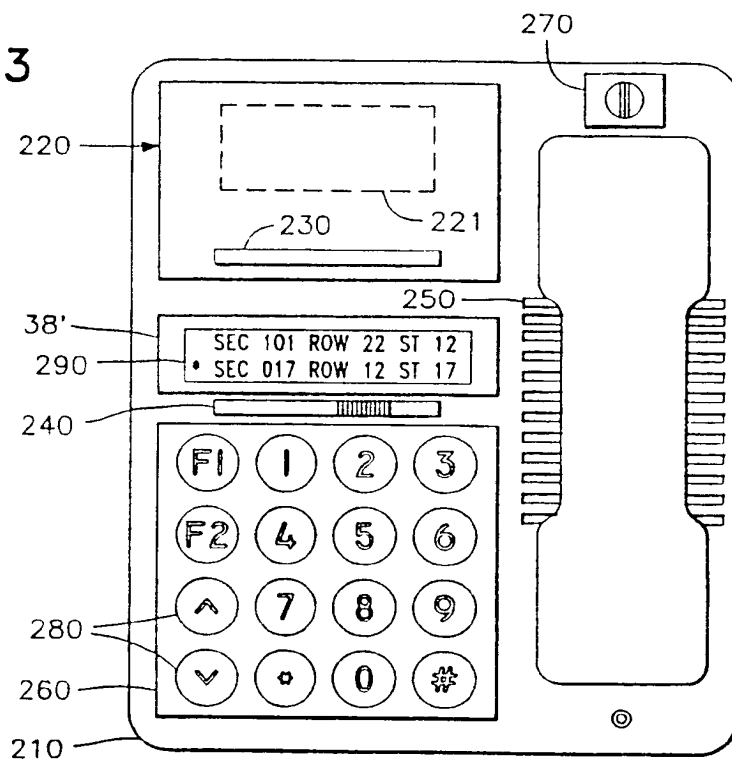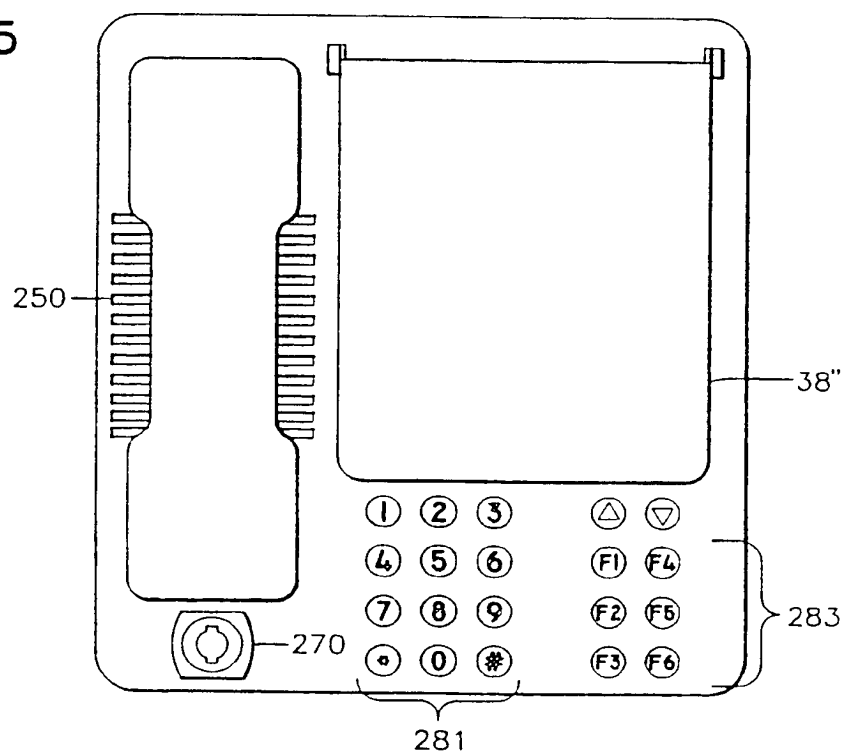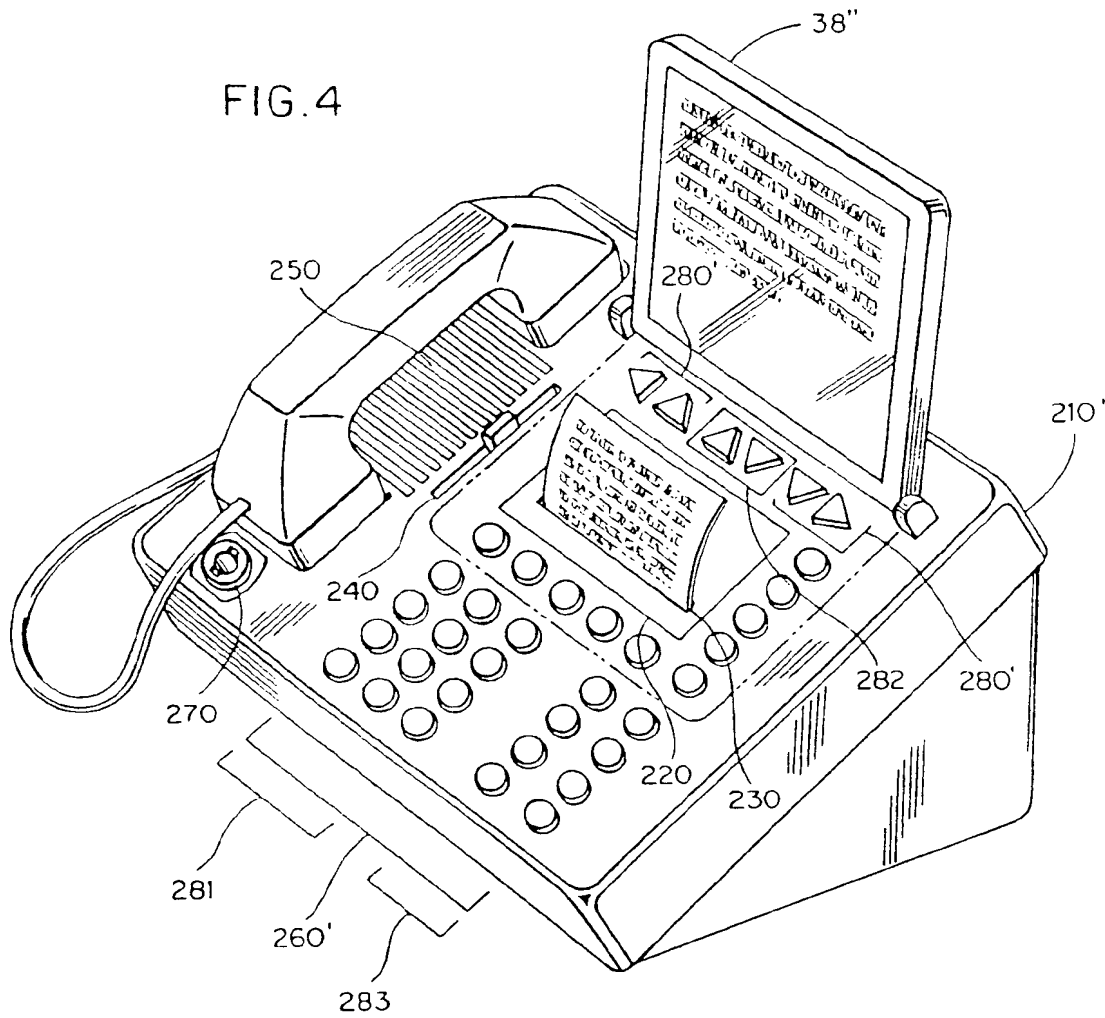
FIG. 1

FIG. 2

FIG. 2A

**FIG. 3**



SEC 101 ROW 22 ST 12
• SEC 017 ROW 12 ST 17

**FIG. 5**

FIG.4

FIG. 6